



United States
Department of
Agriculture



Natural
Resources
Conservation
Service

In cooperation with
Missouri Department of
Natural Resources;
Missouri Agricultural
Experiment Station;
Missouri Department of
Conservation; and U.S.
Army Corps of Engineers,
Kansas City District

Soil Survey of Cedar County, Missouri



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How To Use This Soil Survey

General Soil Map

The general soil map, which is a color map, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

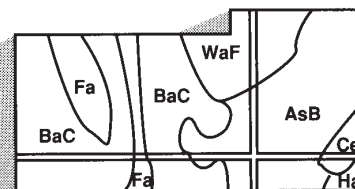
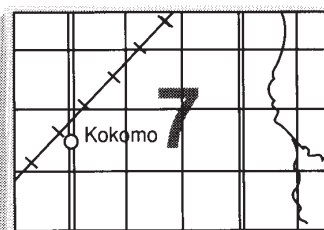
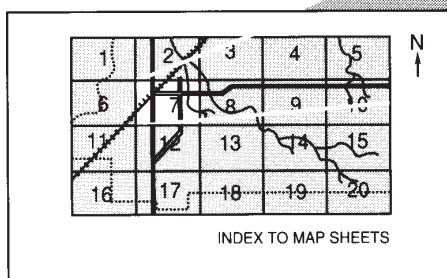
Detailed Soil Maps

The detailed soil maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**. Note the number of the map sheet and turn to that sheet.

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Contents**, which lists the map units by symbol and name and shows the page where each map unit is described.

The **Contents** shows which table has data on a specific land use for each detailed soil map unit. Also see the **Contents** for sections of this publication that may address your specific needs.



NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1998. Soil names and descriptions were approved in 2002. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1998. This survey was made cooperatively by the Natural Resources Conservation Service; the Missouri Department of Natural Resources; the Missouri Agricultural Experiment Station; the Missouri Department of Conservation; and the U.S. Army Corps of Engineers, Kansas City District. The survey is part of the technical assistance furnished to the Cedar County Soil and Water Conservation District. Financial assistance was provided by the Missouri Department of Natural Resources.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

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Cover: Stockton Lake, in an area of the Goss-Sonsac association.

Additional information about the Nation's natural resources is available on the Natural Resources Conservation Service homepage on the World Wide Web. The address is <http://www.nrcs.usda.gov>.

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Foreword

This soil survey contains information that affects land use planning in this survey area. It contains predictions of soil behavior for selected land uses. The survey also highlights soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described, and information on specific uses is given. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

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Soil Survey of Cedar County, Missouri

By Richard L. Henderson, Missouri Department of Natural Resources

Fieldwork by Richard L. Henderson, Missouri Department of Natural Resources, and
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United States Department of Agriculture, Natural Resources Conservation Service,
in cooperation with
the Missouri Department of Natural Resources; the Missouri Agricultural Experiment
Station; the Missouri Department of Conservation; the U.S. Army Corps of Engineers,
Kansas City District; and the Cedar County Commission

CEDAR COUNTY is in southwestern Missouri (fig. 1). It is bordered on the south by Dade County, on the west by Vernon and Barton Counties, on the east by Polk County, and on the north by St. Clair County. The county has an area of 319,117 acres, or about 499 square miles. Stockton, the county seat, is in the central part of the county. In 1990, Stockton had a population of 1,579. The population of the county is 13,012 (State of Missouri, 1998).

Most of Cedar County is in the Ozark Border area of the Major Land Resource Areas of Missouri. A section of the northeast corner of the county is in the Ozark Highland area.

This survey updates the soil survey of Cedar County published in 1911 (Watson, 1911). The updated survey defines the soil boundaries more clearly and provides more detailed information about the soils in the county.



Figure 1.—Location of Cedar County in Missouri.

General Nature of the Survey Area

This section provides general information about Cedar County. It describes climate, history and development, and relief and drainage.

Climate

Table 1 gives data on temperature and precipitation for the survey area as recorded at Caplinger Mills in the period 1961 to 1990. Table 2 shows probable dates of the first freeze in fall and the last freeze in

spring. Table 3 provides data on length of the growing season.

In winter, the average temperature is 34.1 degrees F and the average daily minimum temperature is 22.7 degrees. The lowest temperature on record, which occurred on January 5, 1959, is -20 degrees. In summer, the average temperature is 75.3 degrees and the average daily maximum temperature is 88.4 degrees. The highest recorded temperature, which occurred on July 14, 1954, is 116 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is 40.56 inches. Of this total, 28.6 inches, or about 71 percent, usually falls in April through September. The growing season for most crops falls within this period. The heaviest 1-day rainfall on record was 6.25 inches on October 5, 1998. Thunderstorms occur on about 52 days each year, and most occur between May and August.

The average seasonal snowfall is 13 inches. The greatest snow depth at any one time during the period of record was 15 inches. On the average, 8 days of the year have at least 1 inch of snow on the ground. The number of such days varies greatly from year to year. The heaviest 1-day snowfall on record was 12 inches, recorded on November 5, 1951.

The average relative humidity in midafternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 83 percent. The sun shines 66 percent of the time possible in summer and 50 percent in winter. The prevailing wind is from the south, except during February and March, when it is from the northwest. Average windspeed is highest, between 11 and 12 miles per hour, from November to April.

History and Development

Prepared by Richard E. McBee, soil scientist, Natural Resources Conservation Service.

The first European settlers came to Cedar County in 1830 and settled in the southeastern part of the county. Prior to that time, the Osage Indians controlled the land. For the next 15 years, settlement of the area was confined to the eastern part of the county near where Cane Hill and Stockton now stand. By 1845, the number of settlers had increased sufficiently to justify the separation of Cedar County from Dade County. In 1854, the first settlers entered land on the prairie east of Jerico Springs. From then until the beginning of the Civil War, settlement was rapid all over the county. Most of the early settlers came from Tennessee (Watson, 1911).

At the time of early settlement, about 60 percent of the county was covered in timber. Deer, turkey, and

small game were plentiful and furnished much of the food for the settlers. Fields were cleared in areas of bottom land for corn, and stock was grown on the range. No railroads were near, and the only marketable products were the cattle, sheep, hogs, and horses, which were driven to Jefferson City or St. Louis. Because there were no shipping facilities, very little of the timber found its way to outside markets and most was used locally. The building of the railroad near Eldorado Springs in 1870 allowed grain crops to be grown for shipment. Soon after the advent of the railroad, farmers began to fence the open range; it was not entirely fenced, however, until 1885 (Watson, 1911).

Through the early 1900s, the typical farms remained very diversified. Income was derived from the sale of cream, beef, hogs, mules, sheep, eggs, fruit, firewood, and other products. In addition, farmers produced a significant amount of grain, mainly for their own livestock.

Beef cattle production has remained significant throughout the history of the county. It is dependent upon the quality of forage production. After 1950, the number of beef cattle began to increase (Evans and English, 1975). In 1997, the county ranked 24th in the state in number of beef cattle (Missouri Department of Agriculture, 1998).

During the early 1900s, grain production, corn, oats, and wheat were the dominant crops (Watson, 1911). The acreage devoted to grain had begun to decline by 1960, and more acreage was used for hay and pasture.

After the native grasses disappeared, redtop and timothy were the dominant grasses until fescue became well established in the 1960s. After 1940, orchardgrass, small grain cut for hay, red clover, and sorghum were significant forage crops. Lespedeza production started in the 1930s and was extremely important until the 1950s. Alfalfa had become an important crop by 1950 and remained very productive until the early 1970s, when the alfalfa weevil cut production. During the past 20 years or more, tall fescue has dominated the countryside. In recent years, alfalfa, red clover, ladino clover, small grain for silage, orchardgrass, and sorghum-sudan hybrids have all played a significant role in hay and pasture production.

The construction of the Stockton dam and reservoir by the Corps of Engineers in the late 1960s had a major impact on the county. The lake covered nearly half of the best bottom land, and many farmers had to relocate. Tourism, however, became a vital part of the economy, and many people chose the area for

retirement homes (Missouri Agricultural Statistics Service, 1997).

Relief and Drainage

Cedar County is a transitional area between the gently rolling to hilly landscapes of the Ozark Border region and the remnants of the nearly level to gently rolling plain of the Cherokee Prairie region.

The Sac River valley dissects these transitional regions from north to south in Cedar County. The area west of this valley consists of broad flats and scattered low mounds, and the geology is typically Pennsylvanian. Local relief is generally 50 to 100 feet. In the slightly more dissected areas along the larger streams, local relief can be more than 150 feet. The areas east of the Sac River valley, except for the remnant prairies surrounding the towns of Bearcreek and Cane Hill, are the most dissected. Local relief generally is 100 to 200 feet, but in areas along major streams it is more than 250 feet (Watson, 1911).

The highest elevation in Cedar County, 1,100 feet, is about 2 miles east of Masters in the southeastern part of the county. The lowest point, 730 feet, is where the Sac River leaves the county in the north-central part (Neill, 1987).

All of Cedar County is in the Osage River watershed. With the exception of the extreme northwest corner, the county is drained by the Sac River and its tributaries.

Cedar Creek, Horse Creek, and Alder Creek drain most of the nearly level to gently sloping areas in the western part of the county. Bear Creek and Turkey Creek drain all of the deeply dissected areas in the eastern part of the county.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of

management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot

predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

The descriptions, names, and delineations of the soils in this survey area do not fully agree with those of the soils in adjacent survey areas. Differences are the result of a better knowledge of soils, modifications in series concepts, or variations in the intensity of mapping or in the extent of the soils in the survey areas.

General Soil Map Units

The general soil map in this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. These broad areas are called associations. Each association on the general soil map is a unique natural landscape. Typically, it consists of one or more major soils or miscellaneous areas and some minor soils or miscellaneous areas. It is named for the major soils or miscellaneous areas. The components of one association can occur in another but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one association differ from place to place in slope, depth, drainage, and other characteristics that affect management.

1. Bona-Creldon-Hoberg Association

Setting

Landform: Divides, ridges, and hills

Slope range: 1 to 15 percent

Composition

Extent of the association in the survey area: 9 percent

Extent of the components in the association (fig. 2):

Bona and similar soils—56 percent

Creldon and similar soils—21 percent

Hoberg and similar soils—21 percent

Soils of minor extent—2 percent

Soils of Minor Extent

- Wanda soils on summits and shoulders

Component Descriptions

Bona

Position on the landform: Shoulders and backslopes

Parent material: Gravelly colluvium over clayey residuum derived from cherty limestone

Slope: 3 to 15 percent

Creldon

Position on the landform: Summits

Parent material: Loess over gravelly colluvium over clayey residuum derived from cherty limestone

Slope: 1 to 3 percent

Hoberg

Position on the landform: Summits

Parent material: Fine-loamy colluvium over clayey residuum derived from cherty limestone

Slope: 2 to 5 percent

2. Goss-Sonsac Association

Setting

Landform: Ridges and hills

Slope range: 3 to 35 percent

Composition

Extent of the association in the survey area: 30 percent

Extent of the components in the association (fig. 3):

Goss and similar soils—48 percent

Sonsac and similar soils—17 percent

Soils of minor extent—35 percent

Soils of Minor Extent

- Alsup soils on backslopes
- Moko soils on shoulders and backslopes
- Hartville and Pomme soils on footslopes
- Viraton soils on summits

Component Descriptions

Goss

Position on the landform: Shoulders and backslopes

Parent material: Gravelly colluvium over clayey residuum derived from cherty limestone

Slope: 3 to 35 percent

Sonsac

Position on the landform: Backslopes

Parent material: Gravelly colluvium over residuum derived from cherty limestone

Slope: 3 to 35 percent

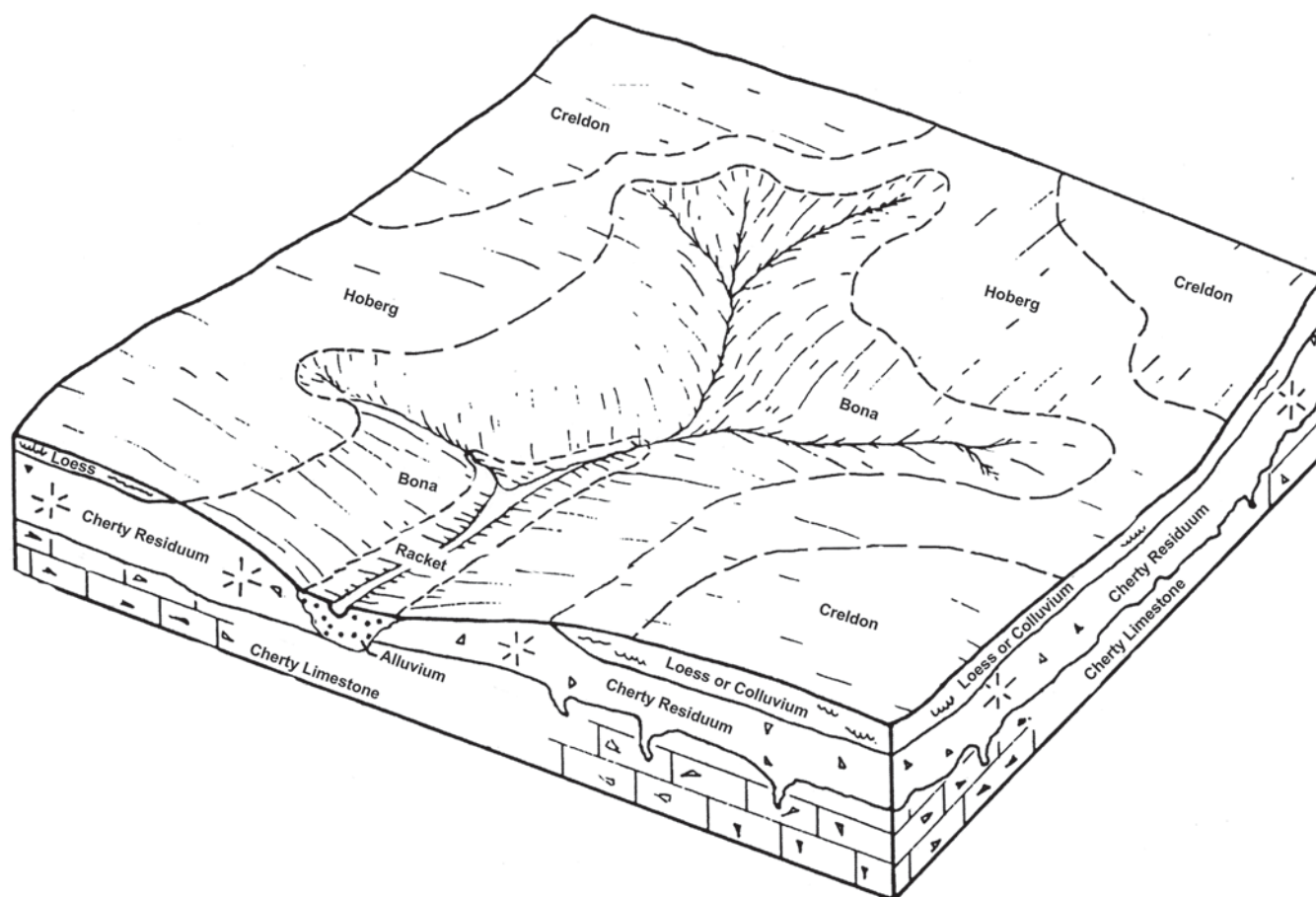


Figure 2.—Typical pattern of soils and parent material in the Bona-Creldon-Hoberg association.

3. Sylvania-Barden-Barco Association

Setting

Landform: Hills, divides, and ridges

Slope range: 1 to 15 percent

Composition

Extent of the association in the survey area: 17 percent

Extent of the components in the association (fig. 4):

Sylvania and similar soils—39 percent

Barden and similar soils—39 percent

Barco and similar soils—20 percent

Soils of minor extent—2 percent

Soils of Minor Extent

- Parsons soils on summits

Component Descriptions

Sylvania

Position on the landform: Summits, shoulders, and backslopes

Parent material: Colluvium over clayey residuum derived from sandstone and shale

Slope: 2 to 15 percent

Barden

Position on the landform: Summits and footslopes

Parent material: Loess over residuum derived from clayey shale

Slope: 1 to 5 percent

Barco

Position on the landform: Summits

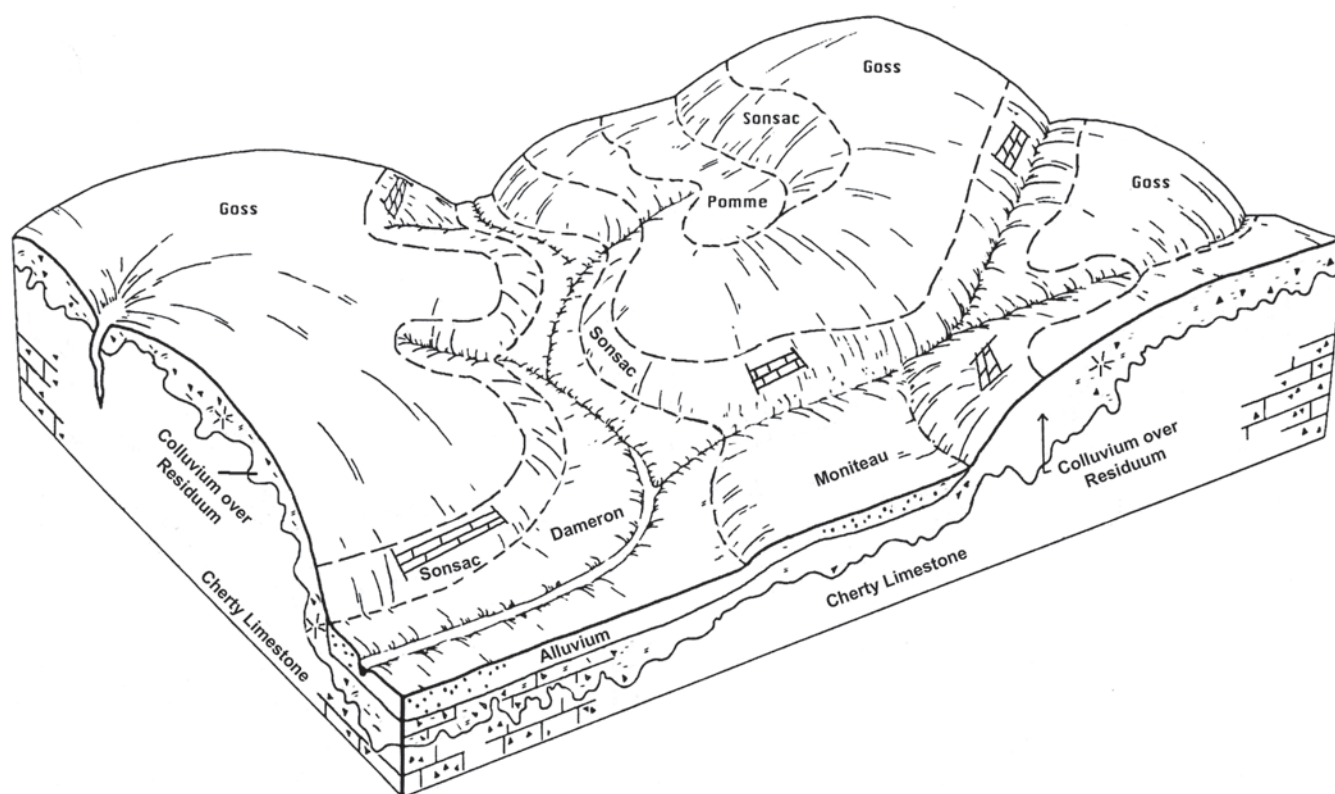


Figure 3.—Typical pattern of soils and parent material in the Goss-Sonsac association.

Parent material: Residuum derived from sandstone
Slope: 2 to 5 percent

4. Cliquot-Bolivar Association

Setting

Landform: Ridges and hills
Slope range: 3 to 20 percent

Composition

Extent of the association in the survey area: 30 percent
Extent of the components in the association (fig. 5):
 Cliquot and similar soils—75 percent
 Bolivar and similar soils—14 percent
 Soils of minor extent—11 percent

Soils of Minor Extent

- Arnica soils on footslopes
- Courtois and Hobson soils on summits
- Collinsville soils on backslopes

Component Descriptions

Cliquot

Position on the landform: Summits and backslopes

Parent material: Colluvium over clayey residuum derived from sandstone and shale

Slope: 3 to 20 percent

Bolivar

Position on the landform: Summits

Parent material: Residuum derived from sandstone

Slope: 3 to 8 percent

5. Ocie-Gatewood Association

Setting

Landform: Hills

Slope range: 3 to 35 percent

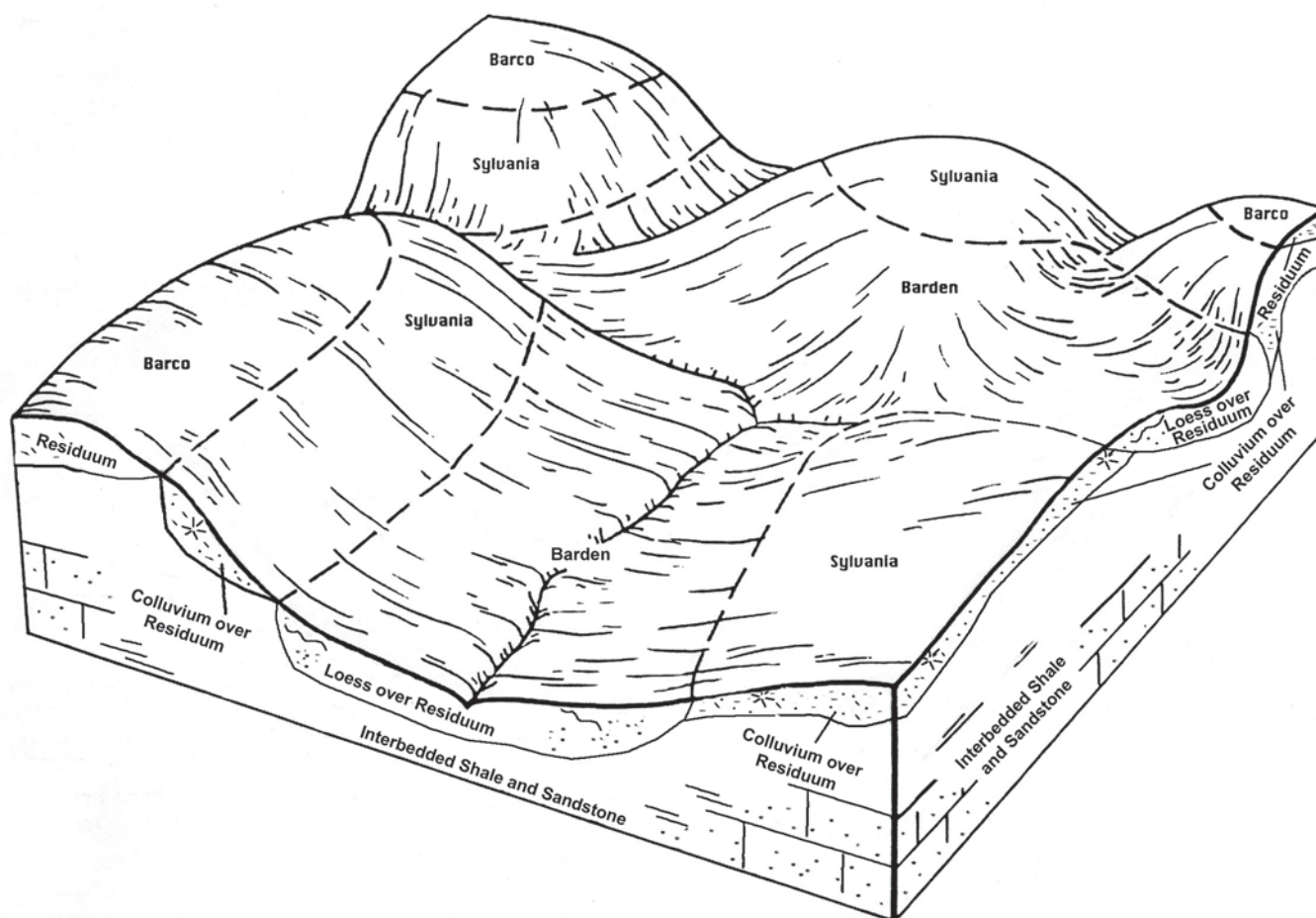


Figure 4.—Typical pattern of soils and parent material in the Sylvania-Barden-Barco association.

Composition

Extent of the association in the survey area: 2 percent

Extent of the components in the association:

Ocie and similar soils—85 percent

Gatewood and similar soils—10 percent

Soils of minor extent—5 percent

Soils of Minor Extent

- Cliquot soils on backslopes

Component Descriptions

Ocie

Position on the landform: Backslopes

Parent material: Gravelly colluvium over clayey residuum derived from dolostone

Slope: 3 to 35 percent

Gatewood

Position on the landform: Backslopes

Parent material: Gravelly colluvium over clayey residuum derived from limestone and sandstone

Slope: 15 to 35 percent

6. Sturkie-Cleora-Moniteau Association

Setting

Landform: Flood plains

Slope range: 0 to 2 percent

Composition

Extent of the association in the survey area: 12 percent

Extent of the components in the association:

Sturkie and similar soils—33 percent

Cleora and similar soils—29 percent

Moniteau and similar soils—17 percent

Soils of minor extent—21 percent

Soils of Minor Extent

- Racket soils on flood plains
- Quarles soils on stream terraces
- Cotter soils on flood-plain steps

Component Descriptions

Sturkie

Position on the landform: Flood plains

Parent material: Alluvium

Slope: 0 to 2 percent

Cleora

Position on the landform: Flood plains

Parent material: Alluvium

Slope: 0 to 2 percent

Moniteau

Position on the landform: Stream terraces

Parent material: Alluvium

Slope: 0 to 2 percent

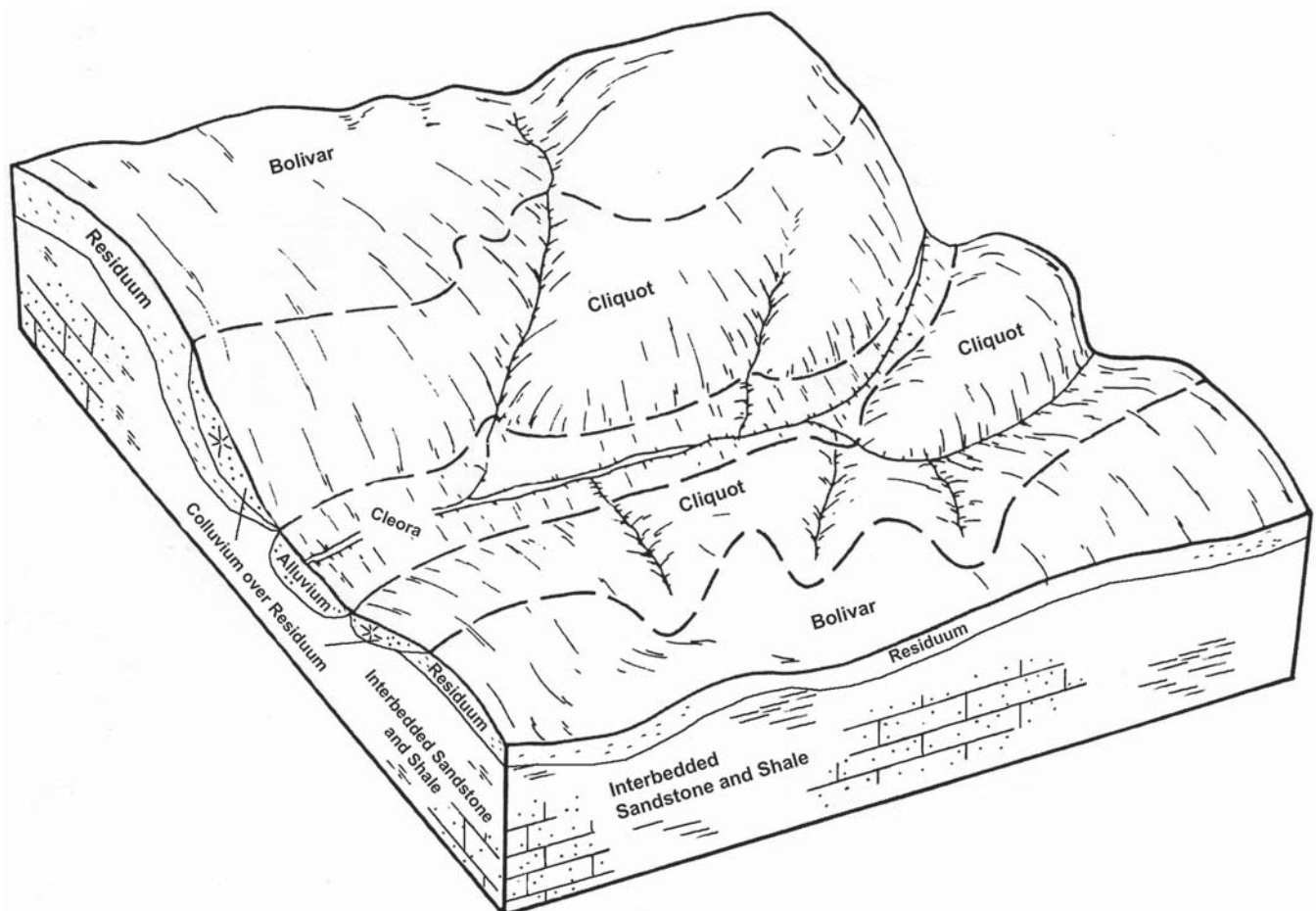


Figure 5.—Typical pattern of soils and parent material in the Cliquot-Bolivar association.

Detailed Soil Map Units

The map units delineated on the detailed soil maps in this survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The contrasting components are mentioned in the map unit descriptions. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Goss gravelly silt loam, 3 to 8 percent slopes, is a phase of the Goss series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are called complexes. A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Barco-Sylvania complex, 2 to 5 percent slopes, is an example.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Pits, quarries, is an example.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables give properties of the

soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

40000—Barden silt loam, 1 to 3 percent slopes

Map Unit Setting

Landform: Divides on uplands (fig. 6)

Component Description

Barden

Percent of the map unit: 80 percent

Position on the landform: Summits

Parent material: Loess over residuum derived from clayey shale

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Surface runoff class: High

Depth to restrictive feature: More than 60 inches

Component Hydrologic Properties

Flooding: None

Current depth to water table: 24 to 36 inches

Drainage class: Moderately well drained

Typical Profile

Ap—0 to 8 inches; silt loam

Bt1—8 to 23 inches; silty clay

Bt2—23 to 68 inches; silty clay loam

Cr—68 to 74 inches; weathered bedrock

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Additional Components

Creldon and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 1 to 3 percent

Landform: Summits on divides in the uplands

Parsons and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 0 to 2 percent

Landform: Summits on divides in the uplands

Barco and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 2 to 5 percent

Landform: Summits on ridges in the uplands

Sylvania and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 2 to 5 percent

Landform: Summits on ridges in the uplands

40001—Bolivar loam, 3 to 8 percent slopes

Map Unit Setting

Landform: Ridges on uplands

Component Description

Bolivar

Percent of the map unit: 90 percent

Position on the landform: Summits

Parent material: Residuum derived from sandstone

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Moderately deep (20 to 40 inches)

Surface runoff class: Very high

Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic); 30 to 60 inches to bedrock (lithic)

Component Hydrologic Properties

Flooding: None

Current depth to water table: None

Drainage class: Well drained

Typical Profile

Ap—0 to 9 inches; loam

Bt1—9 to 25 inches; loam

Bt2—25 to 38 inches; channery sandy clay loam

Cr—38 to 42 inches; weathered bedrock

R—42 to 80 inches; unweathered bedrock

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Additional Components

Basehor and similar soils

Estimated percent of the map unit: 0 to 3 percent

Slope range: 3 to 15 percent

Landform: Backslopes on hills in the uplands

Cedargap and similar soils

Estimated percent of the map unit: 0 to 3 percent



Figure 6.—An area of Barden silt loam, 1 to 3 percent slopes, used for wheat production.

Slope range: 0 to 3 percent

Landform: Flood plains in river valleys

Viraton and similar soils

Estimated percent of the map unit: 0 to 2 percent

Slope range: 5 to 9 percent

Landform: Summits on hills

Ocie and similar soils

Estimated percent of the map unit: 0 to 2 percent

Slope range: 8 to 15 percent

Landform: Side slopes on hillsides

40004—Barden loam, 2 to 5 percent slopes

Map Unit Setting

Landform: Hills on uplands

Component Description

Barden

Percent of the map unit: 80 percent

Position on the landform: Footslopes

Parent material: Loess over residuum derived from clayey shale

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Surface runoff class: High

Depth to restrictive feature: More than 60 inches

Component Hydrologic Properties

Flooding: None

Current depth to water table: 24 to 36 inches

Drainage class: Moderately well drained

Typical Profile

A—0 to 7 inches; loam

BA—7 to 16 inches; loam

Bt—16 to 65 inches; clay

BC—65 to 80 inches; clay loam

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Additional Components**Sylvania and similar soils**

Estimated percent of the map unit: 0 to 10 percent

Slope range: 5 to 15 percent

Landform: Backslopes on hills in the uplands

Parsons and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 0 to 2 percent

Landform: Summits on divides in the uplands

Saturated soils

Estimated percent of the map unit: 0 to 5 percent

40005—Sylvania loam, 5 to 15 percent slopes, very stony**Map Unit Setting**

Landform: Hills on uplands

Component Description**Sylvania**

Percent of the map unit: 90 percent

Position on the landform: Backslopes

Parent material: Colluvium over clayey residuum derived from sandstone and shale

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Deep (40 to 60 inches)

Surface runoff class: High

Percent of surface covered by rock fragments: 0.10 to 3.0 percent (subangular stones)

Depth to restrictive feature: 40 to 60 inches to bedrock (paralithic)

Component Hydrologic Properties

Flooding: None

Current depth to water table: 30 to 48 inches

Drainage class: Moderately well drained

Typical Profile

Ap—0 to 6 inches; loam

A—6 to 11 inches; gravelly loam

BA—11 to 15 inches; very gravelly sandy clay loam

2Bt—15 to 45 inches; clay

2Cr—45 to 55 inches; weathered bedrock

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Additional Components**Barco and similar soils**

Estimated percent of the map unit: 0 to 5 percent

Slope range: 2 to 5 percent

Landform: Summits on ridges in the uplands

Basehor and similar soils

Estimated percent of the map unit: 0 to 3 percent

Slope range: 3 to 15 percent

Landform: Backslopes on hills in the uplands

Barden and similar soils

Estimated percent of the map unit: 0 to 2 percent

Slope range: 2 to 5 percent

Landform: Footslopes on hills in the uplands

40006—Barco-Sylvania complex, 2 to 5 percent slopes**Map Unit Setting**

Landform: Ridges on uplands

Component Description**Barco**

Percent of the map unit: 55 percent

Position on the landform: Summits

Parent material: Residuum derived from sandstone

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Moderately deep (20 to 40 inches)

Surface runoff class: High
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)

Component Hydrologic Properties

Flooding: None
Current depth to water table: More than 6 feet
Drainage class: Well drained

Typical Profile

A—0 to 7 inches; loam
 AB—7 to 14 inches; loam
 Bt1—14 to 23 inches; loam
 Bt2—23 to 31 inches; cobbly clay loam
 Cr—31 to 39 inches; weathered bedrock
 R—39 to 80 inches; unweathered bedrock

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Sylvania

Percent of the map unit: 35 percent
Position on the landform: Summits
Parent material: Colluvium over clayey residuum derived from sandstone and shale
Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Deep (40 to 60 inches)
Surface runoff class: Medium
Depth to restrictive feature: 40 to 60 inches to bedrock (paralithic)

Component Hydrologic Properties

Flooding: None
Current depth to water table: 30 to 48 inches
Drainage class: Moderately well drained

Typical Profile

A—0 to 10 inches; loam
 BA—10 to 16 inches; loam
 Bt—16 to 32 inches; clay loam
 BC—32 to 49 inches; gravelly loam
 Cr—49 to 60 inches; unweathered bedrock

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Additional Components

Barden and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 1 to 3 percent
Landform: Summits on divides in the uplands

Bona and similar soils

Estimated percent of the map unit: 0 to 5 percent
Slope range: 3 to 8 percent
Landform: Shoulders on ridges in the uplands

40007—Eldorado gravelly loam, 3 to 15 percent slopes, very stony

Map Unit Setting

Landform: Hills on uplands

Component Description

Eldorado

Percent of the map unit: 90 percent
Position on the landform: Shoulders
Parent material: Gravelly colluvium over clayey residuum derived from cherty limestone
Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)
Surface runoff class: Medium
Percent of surface covered by rock fragments: 0.10 to 3.0 percent (subrounded stones)
Depth to restrictive feature: More than 60 inches

Component Hydrologic Properties

Flooding: None
Current depth to water table: More than 6 feet
Drainage class: Well drained

Typical Profile

A1—0 to 8 inches; gravelly loam
 A2—8 to 13 inches; cobbly loam
 Bt1—13 to 33 inches; very cobbly clay loam
 2Bt2—33 to 60 inches; very cobbly clay

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Additional Components

Hoberg and similar soils

Estimated percent of the map unit: 0 to 10 percent
Slope range: 2 to 5 percent
Landform: Summits on ridges in the uplands

40008—Parsons silt loam, 0 to 2 percent slopes

Map Unit Setting

Landform: Divides on uplands

Component Description

Parsons

Percent of the map unit: 90 percent

Position on the landform: Summits

Parent material: Silty and clayey colluvium

Slope shape: Concave

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Surface runoff class: Negligible

Depth to restrictive feature: More than 60 inches

Component Hydrologic Properties

Flooding: None

Current depth to water table: 6 to 18 inches

Drainage class: Somewhat poorly drained

Typical Profile

A—0 to 8 inches; silt loam

E—8 to 16 inches; silt loam

Btg1—16 to 31 inches; clay

Btg2—31 to 60 inches; silty clay loam

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Additional Components

Barden and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 1 to 3 percent

Landform: Summits on divides in the uplands

Creldon and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 1 to 3 percent

Landform: Summits on divides in the uplands

40009—Sylvania loam, 5 to 8 percent slopes

Map Unit Setting

Landform: Hills on uplands

Component Description

Sylvania

Percent of the map unit: 95 percent

Position on the landform: Shoulders

Parent material: Colluvium over clayey residuum derived from sandstone and shale

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Deep (40 to 60 inches)

Surface runoff class: High

Depth to restrictive feature: 40 to 60 inches to bedrock (paralithic)

Component Hydrologic Properties

Flooding: None

Current depth to water table: 30 to 48 inches

Drainage class: Moderately well drained

Typical Profile

Ap—0 to 7 inches; loam

A—7 to 10 inches; gravelly clay loam

2Bt—10 to 28 inches; clay

2BC—28 to 42 inches; channery silty clay

2Cr—42 to 52 inches; weathered bedrock

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Additional Components

Barco and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 2 to 5 percent

Landform: Summits on ridges in the uplands

40010—Collinsville-Rock outcrop complex, 3 to 15 percent slopes

Map Unit Setting

Landform: Hills on uplands

Component Description

Collinsville

Percent of the map unit: 65 percent

Position on the landform: Backslopes

Parent material: Residuum derived from sandstone

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Shallow (10 to 20 inches)

Surface runoff class: Very high

Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)

Component Hydrologic Properties*Flooding:* None*Current depth to water table:* More than 6 feet*Drainage class:* Well drained**Typical Profile**

A—0 to 6 inches; fine sandy loam

Bw—6 to 15 inches; gravelly fine sandy loam

R—15 to 80 inches; unweathered bedrock

Detailed profile descriptions are given in the “Classification of the Soils” section. Additional information is provided in the tables described under the heading “Soil Properties.”

Rock outcrop*Percent of the map unit:* 30 percent**Additional Components****Bolivar and similar soils***Estimated percent of the map unit:* 0 to 5 percent*Slope range:* 3 to 8 percent*Landform:* Summits on ridges in the uplands**44001—Quarles silt loam, 0 to 2 percent slopes, rarely flooded****Map Unit Setting***Landform:* Stream terraces in river valleys**Component Description****Quarles***Percent of the map unit:* 85 percent*Parent material:* Alluvium*Slope shape:* Linear**Component Properties and Qualities***Depth to bedrock:* Very deep (more than 60 inches)*Surface runoff class:* High*Depth to restrictive feature:* More than 60 inches**Component Hydrologic Properties***Flooding frequency:* Rare*Current depth to water table:* 0 to 18 inches*Drainage class:* Poorly drained**Typical Profile**

Ap—0 to 8 inches; silt loam

Eg—8 to 25 inches; silt loam

Btg—25 to 80 inches; silty clay loam

Detailed profile descriptions are given in the

“Classification of the Soils” section. Additional information is provided in the tables described under the heading “Soil Properties.”

Additional Components**Sturkie and similar soils***Estimated percent of the map unit:* 0 to 8 percent*Slope range:* 0 to 2 percent*Landform:* Flood plains in river valleys**Moniteau and similar soils***Estimated percent of the map unit:* 0 to 7 percent*Slope range:* 0 to 2 percent*Landform:* Treads on stream terraces in river valleys**46000—Humansville silt loam, 0 to 2 percent slopes, frequently flooded****Map Unit Setting***Landform:* Flood plains in river valleys**Component Description****Humansville***Percent of the map unit:* 90 percent*Parent material:* Fine-silty alluvium*Slope shape:* Concave**Component Properties and Qualities***Depth to bedrock:* Very deep (more than 60 inches)*Surface runoff class:* Negligible*Depth to restrictive feature:* More than 60 inches**Component Hydrologic Properties***Flooding frequency:* Frequent*Current depth to water table:* 6 to 12 inches*Drainage class:* Poorly drained**Typical Profile**

Ap—0 to 7 inches; silt loam

A—7 to 24 inches; silty clay loam

Bg—24 to 60 inches; silty clay loam

Detailed profile descriptions are given in the “Classification of the Soils” section. Additional information is provided in the tables described under the heading “Soil Properties.”

Additional Components**Horsecreek and similar soils***Estimated percent of the map unit:* 0 to 4 percent*Slope range:* 0 to 2 percent*Landform:* Treads on stream terraces in river valleys

Moniteau and similar soils

Estimated percent of the map unit: 0 to 3 percent
Slope range: 0 to 2 percent
Landform: Treads on stream terraces in river valleys

Sturkie and similar soils

Estimated percent of the map unit: 0 to 3 percent
Slope range: 0 to 2 percent
Landform: Flood plains in river valleys

66000—Moniteau silt loam, 0 to 2 percent slopes, occasionally flooded***Map Unit Setting***

Landform: Stream terraces in river valleys

Component Description**Moniteau**

Percent of the map unit: 85 percent
Parent material: Fine-silty alluvium

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)
Surface runoff class: Negligible
Depth to restrictive feature: More than 60 inches

Component Hydrologic Properties

Flooding frequency: Occasional
Current depth to water table: 0 to 12 inches
Drainage class: Poorly drained

Typical Profile

Ap—0 to 6 inches; silt loam
 E—6 to 18 inches; silt loam
 Btg—18 to 60 inches; silty clay loam

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Additional Components**Horsecreek and similar soils**

Estimated percent of the map unit: 0 to 4 percent
Slope range: 0 to 2 percent
Landform: Treads on stream terraces in river valleys

Sturkie and similar soils

Estimated percent of the map unit: 0 to 4 percent
Slope range: 0 to 2 percent
Landform: Flood plains in river valleys

Humansville and similar soils

Estimated percent of the map unit: 0 to 4 percent
Slope range: 0 to 3 percent
Landform: Flood plains in river valleys

Saturated soils

Estimated percent of the map unit: 0 to 3 percent

66001—Dameron silt loam, 0 to 3 percent slopes, frequently flooded***Map Unit Setting***

Landform: Flood plains in river valleys

Component Description**Dameron**

Percent of the map unit: 100 percent
Parent material: Alluvium
Slope shape: Linear

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)
Surface runoff class: Low
Depth to restrictive feature: More than 60 inches

Component Hydrologic Properties

Flooding frequency: Frequent
Current depth to water table: More than 6 feet
Drainage class: Well drained

Typical Profile

Ap—0 to 9 inches; silt loam
 A—9 to 15 inches; silty clay loam
 Bw1—15 to 24 inches; very gravelly clay loam
 Bw2—24 to 72 inches; silty clay loam
 Bw3—72 to 80 inches; extremely gravelly clay loam

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

70000—Bona gravelly silt loam, 3 to 8 percent slopes***Map Unit Setting***

Landform: Ridges on uplands

Component Description**Bona**

Percent of the map unit: 90 percent

Position on the landform: Shoulders

Parent material: Gravelly colluvium over clayey residuum derived from cherty limestone

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Surface runoff class: High

Depth to restrictive feature: 60 to 80 inches to bedrock (lithic)

Component Hydrologic Properties

Flooding: None

Current depth to water table: More than 6 feet

Drainage class: Well drained

Typical Profile

Ap—0 to 6 inches; gravelly silt loam

A—6 to 18 inches; very gravelly silt loam

Bt1—18 to 24 inches; extremely gravelly silt loam

2Bt2—24 to 30 inches; very gravelly clay

3Bt3—30 to 72 inches; clay

3R—72 to 80 inches; unweathered bedrock

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Additional Components

Hoberg and similar soils

Estimated percent of the map unit: 0 to 10 percent

Slope range: 2 to 5 percent

Landform: Summits on ridges in the uplands

70001—Bona gravelly silt loam, 8 to 15 percent slopes

Map Unit Setting

Landform: Hills on uplands

Component Description

Bona

Percent of the map unit: 90 percent

Position on the landform: Backslopes

Parent material: Gravelly colluvium over clayey residuum derived from cherty limestone

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Surface runoff class: High

Depth to restrictive feature: 60 to 80 inches to bedrock (lithic)

Component Hydrologic Properties

Flooding: None

Current depth to water table: More than 6 feet

Drainage class: Well drained

Typical Profile

Ap—0 to 7 inches; gravelly silt loam

A—7 to 12 inches; very gravelly silt loam

BA—12 to 19 inches; extremely gravelly silt loam

2Bt—19 to 45 inches; very gravelly clay

3Bt—45 to 62 inches; clay

3R—62 to 80 inches; unweathered bedrock

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Additional Components

Wanda and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 2 to 5 percent

Landform: Footslopes on paleoterraces in river valleys

Sonsac and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 3 to 15 percent

Landform: Backslopes on hills in the uplands

70002—Alsop gravelly silt loam, 3 to 8 percent slopes

Map Unit Setting

Landform: Hills on uplands

Component Description

Alsop

Percent of the map unit: 90 percent

Position on the landform: Summits

Parent material: Colluvium over clayey residuum derived from shale and siltstone

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Deep (40 to 60 inches)

Surface runoff class: Medium

Depth to restrictive feature: 40 to 60 inches to bedrock (paralithic)

Component Hydrologic Properties*Flooding:* None*Current depth to water table:* 30 to 48 inches*Drainage class:* Moderately well drained**Typical Profile**

Ap—0 to 4 inches; gravelly silt loam

E—4 to 13 inches; gravelly silt loam

2Bt1—13 to 23 inches; silty clay loam

2Bt2—23 to 39 inches; clay

2Bt3—39 to 44 inches; channery silty clay loam

2Cr—44 to 60 inches; weathered bedrock

Detailed profile descriptions are given in the “Classification of the Soils” section. Additional information is provided in the tables described under the heading “Soil Properties.”

Additional Components**Sacville and similar soils***Estimated percent of the map unit:* 0 to 4 percent*Slope range:* 1 to 3 percent*Landform:* Base slopes on hills**Pomme and similar soils***Estimated percent of the map unit:* 0 to 5 percent*Slope range:* 3 to 8 percent*Landform:* Treads on strath terraces**Cedargap and similar soils***Estimated percent of the map unit:* 0 to 3 percent*Slope range:* 0 to 3 percent*Landform:* Flood plains in river valleys**70003—Alsup gravelly silt loam, 8 to 15 percent slopes****Map Unit Setting***Landform:* Hills on uplands**Component Description****Alsup***Percent of the map unit:* 90 percent*Position on the landform:* Backslopes*Parent material:* Colluvium over clayey residuum derived from shale and siltstone*Slope shape:* Convex**Component Properties and Qualities***Depth to bedrock:* Deep (40 to 60 inches)*Surface runoff class:* High*Depth to restrictive feature:* 40 to 60 inches to bedrock (paralithic)**Component Hydrologic Properties***Flooding:* None*Current depth to water table:* 30 to 48 inches*Drainage class:* Moderately well drained**Typical Profile**

Ap—0 to 7 inches; gravelly silt loam

E—7 to 12 inches; very gravelly silt loam

2Bt—12 to 40 inches; clay

2BC—40 to 56 inches; very channery silty clay loam

2Cr—56 to 66 inches; weathered bedrock

Detailed profile descriptions are given in the “Classification of the Soils” section. Additional information is provided in the tables described under the heading “Soil Properties.”

Additional Components**Cedargap and similar soils***Estimated percent of the map unit:* 0 to 4 percent*Slope range:* 0 to 3 percent*Landform:* Flood plains in river valleys**Moko and similar soils***Estimated percent of the map unit:* 0 to 3 percent*Slope range:* 3 to 15 percent*Landform:* Base slopes on hillsides**Goss and similar soils***Estimated percent of the map unit:* 0 to 3 percent*Slope range:* 8 to 15 percent*Landform:* Side slopes on hills**70004—Alsup silt loam, 15 to 35 percent slopes, very stony****Map Unit Setting***Landform:* Hills on uplands**Component Description****Alsup***Percent of the map unit:* 90 percent*Position on the landform:* Backslopes*Parent material:* Colluvium over clayey residuum derived from shale and siltstone*Slope shape:* Convex**Component Properties and Qualities***Depth to bedrock:* Deep (40 to 60 inches)

Surface runoff class: Very high

Percent of surface covered by rock fragments: 0.10 to 3.0 percent (subangular stones)

Depth to restrictive feature: 40 to 60 inches to bedrock (paralithic)

Component Hydrologic Properties

Flooding: None

Current depth to water table: 30 to 48 inches

Drainage class: Moderately well drained

Typical Profile

Ap—0 to 4 inches; silt loam

E—4 to 9 inches; silt loam

2Bt1—9 to 20 inches; silty clay

2Bt2—20 to 41 inches; channery silty clay

2Cr—41 to 46 inches; weathered bedrock

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Additional Components

Cedargap and similar soils

Estimated percent of the map unit: 0 to 4 percent

Slope range: 0 to 3 percent

Landform: Flood plains in river valleys

Moko and similar soils

Estimated percent of the map unit: 0 to 3 percent

Slope range: 3 to 15 percent

Landform: Base slopes on hillsides

Goss and similar soils

Estimated percent of the map unit: 0 to 3 percent

Slope range: 15 to 35 percent

Landform: Side slopes on hills

70006—Credon silt loam, 1 to 3 percent slopes

Map Unit Setting

Landform: Divides on uplands

Component Description

Credon

Percent of the map unit: 90 percent

Position on the landform: Summits

Parent material: Loess over gravelly colluvium over clayey residuum derived from cherty limestone

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Surface runoff class: Medium

Depth to restrictive feature: 18 to 35 inches to a fragipan

Component Hydrologic Properties

Flooding: None

Current depth to water table: 18 to 36 inches

Drainage class: Moderately well drained

Typical Profile

Ap—0 to 8 inches; silt loam

Bt—8 to 27 inches; silty clay

2Btx—27 to 37 inches; very gravelly silt loam

3Bt—37 to 60 inches; very gravelly clay

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Additional Components

Woodson and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 1 to 3 percent

Landform: Toeslopes on paleoterraces in river valleys

Barden and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 1 to 3 percent

Landform: Summits on divides in the uplands

70007—Cliquot gravelly loam, 8 to 15 percent slopes

Map Unit Setting

Landform: Hills on uplands

Component Description

Cliquot

Percent of the map unit: 90 percent

Position on the landform: Backslopes

Parent material: Colluvium over clayey residuum derived from sandstone and shale

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Deep (40 to 60 inches)

Surface runoff class: Very high

Depth to restrictive feature: 40 to 60 inches to bedrock (paralithic)

Component Hydrologic Properties

Flooding: None

Current depth to water table: 42 to 54 inches

Drainage class: Moderately well drained

Typical Profile

A—0 to 5 inches; gravelly loam

E—5 to 26 inches; very gravelly loam

2Bt1—26 to 49 inches; channery silty clay loam

2Bt2—49 to 55 inches; channery silty clay

2Cr—55 to 63 inches; weathered bedrock

2R—63 to 80 inches; unweathered bedrock

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Additional Components

Basehor and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 3 to 15 percent

Landform: Backslopes on hills in the uplands

Bolivar and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 3 to 8 percent

Landform: Summits on ridges in the uplands

70008—Goss gravelly silt loam, 3 to 8 percent slopes

Map Unit Setting

Landform: Ridges on uplands

Component Description

Goss

Percent of the map unit: 85 percent

Position on the landform: Shoulders

Parent material: Gravelly colluvium over clayey residuum derived from cherty limestone

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Surface runoff class: Medium

Depth to restrictive feature: More than 60 inches

Component Hydrologic Properties

Flooding: None

Current depth to water table: More than 6 feet

Drainage class: Well drained

Typical Profile

Ap—0 to 6 inches; gravelly silt loam

BE—6 to 10 inches; very gravelly silt loam

Bt1—10 to 14 inches; very gravelly silty clay loam

2Bt2—14 to 80 inches; gravelly clay

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Additional Components

Viraton and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 3 to 8 percent

Landform: Summits on ridges

Moko and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 3 to 15 percent

Landform: Backslopes on hills

Wilderness and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 3 to 8 percent

Landform: Shoulders on ridges in the uplands

70009—Goss gravelly silt loam, 8 to 15 percent slopes

Map Unit Setting

Landform: Hills on uplands

Component Description

Goss

Percent of the map unit: 80 percent

Position on the landform: Backslopes

Parent material: Gravelly colluvium over clayey residuum derived from cherty limestone

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Surface runoff class: Medium

Depth to restrictive feature: More than 60 inches

Component Hydrologic Properties

Flooding: None

Current depth to water table: More than 6 feet

Drainage class: Well drained

Typical Profile

A—0 to 4 inches; gravelly silt loam
 E—4 to 10 inches; very gravelly silt loam
 BE—10 to 16 inches; very gravelly silt loam
 2Bt—16 to 60 inches; very cobbly clay

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Additional Components**Alsop and similar soils**

Estimated percent of the map unit: 0 to 5 percent
Slope range: 8 to 15 percent
Landform: Backslopes on hills

Sacville and similar soils

Estimated percent of the map unit: 0 to 5 percent
Slope range: 1 to 3 percent
Landform: Footslopes on hills

Viraton and similar soils

Estimated percent of the map unit: 0 to 5 percent
Slope range: 3 to 8 percent
Landform: Summits on ridges

Wilderness and similar soils

Estimated percent of the map unit: 0 to 5 percent
Slope range: 3 to 8 percent
Landform: Shoulders on ridges

70010—Goss very cobbly silt loam, 15 to 35 percent slopes**Map Unit Setting**

Landform: Hills on uplands

Component Description**Goss**

Percent of the map unit: 90 percent
Position on the landform: Backslopes
Parent material: Gravelly colluvium over clayey residuum derived from cherty limestone
Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)
Surface runoff class: Very high
Depth to restrictive feature: More than 60 inches

Component Hydrologic Properties

Flooding: None
Current depth to water table: More than 6 feet
Drainage class: Well drained

Typical Profile

A—0 to 3 inches; very cobbly silt loam
 E—3 to 15 inches; very cobbly silt loam
 Bt1—15 to 21 inches; extremely gravelly silt loam
 2Bt2—21 to 60 inches; very gravelly clay

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Additional Components**Alsop and similar soils**

Estimated percent of the map unit: 0 to 4 percent
Slope range: 8 to 15 percent
Landform: Backslopes on hills

Pomme and similar soils

Estimated percent of the map unit: 0 to 3 percent
Slope range: 3 to 8 percent
Landform: Treads on strath terraces

Moko and similar soils

Estimated percent of the map unit: 0 to 3 percent
Slope range: 3 to 15 percent
Landform: Backslopes on hills

70011—Goss-Moko complex, 8 to 35 percent slopes**Map Unit Setting**

Landform: Hills on uplands

Component Description**Goss**

Percent of the map unit: 50 percent
Position on the landform: Backslopes
Parent material: Gravelly colluvium over clayey residuum derived from cherty limestone
Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)
Surface runoff class: High
Depth to restrictive feature: More than 60 inches

Component Hydrologic Properties

Flooding: None

Current depth to water table: More than 6 feet

Drainage class: Well drained

Typical Profile

A—0 to 9 inches; very gravelly silt loam

E—9 to 21 inches; very gravelly silt loam

Bt1—21 to 36 inches; extremely gravelly clay loam

2Bt2—36 to 60 inches; very gravelly clay

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Moko

Percent of the map unit: 35 percent

Parent material: Gravelly residuum derived from cherty limestone

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very shallow and shallow (4 to 20 inches)

Surface runoff class: Very high

Percent of surface covered by rock fragments: 0 to 3 percent (subangular stones)

Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)

Component Hydrologic Properties

Flooding: None

Current depth to water table: More than 6 feet

Drainage class: Well drained

Typical Profile

A1—0 to 7 inches; gravelly silt loam

A2—7 to 12 inches; very cobbly silty clay loam

R—12 to 80 inches; unweathered bedrock

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Additional Components

Viraton and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 3 to 8 percent

Landform: Summits on hills

Cedargap and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 0 to 3 percent

Landform: Flood plains in river valleys

Wilderness and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 3 to 8 percent

Landform: Shoulders on ridges in the uplands

70012—Hoberg silt loam, 2 to 5 percent slopes

Map Unit Setting

Landform: Ridges on uplands

Component Description

Hoberg

Percent of the map unit: 90 percent

Position on the landform: Summits

Parent material: Fine-loamy colluvium over clayey residuum derived from cherty limestone

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Surface runoff class: Medium

Depth to restrictive feature: 20 to 36 inches to a fragipan

Component Hydrologic Properties

Flooding: None

Current depth to water table: 12 to 36 inches

Drainage class: Moderately well drained

Typical Profile

Ap—0 to 12 inches; silt loam

Bt—12 to 26 inches; silt loam

2Btx—26 to 42 inches; extremely cobbly silty clay loam

3Bt—42 to 62 inches; extremely cobbly clay

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Additional Components

Bona and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 3 to 8 percent

Landform: Shoulders on ridges in the uplands

Wanda and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 2 to 5 percent

Landform: Footslopes on paleoterraces in river valleys

70014—Moko-Rock outcrop complex, 15 to 35 percent slopes, very stony

Map Unit Setting

Landform: Hills on uplands

Component Description

Moko

Percent of the map unit: 55 percent

Position on the landform: Backslopes

Parent material: Gravelly residuum derived from cherty limestone

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very shallow and shallow (4 to 20 inches)

Surface runoff class: Very high

Percent of surface covered by rock fragments: 0.10 to 3.0 percent (subangular stones)

Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)

Component Hydrologic Properties

Flooding: None

Current depth to water table: More than 6 feet

Drainage class: Well drained

Typical Profile

A1—0 to 5 inches; very gravelly clay loam

A2—5 to 13 inches; extremely channery clay loam

R—13 to 80 inches; unweathered bedrock

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Rock outcrop

Percent of the map unit: 35 percent

Additional Components

Sonsac and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 15 to 35 percent

Landform: Backslopes on hills in the uplands

Goss and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 15 to 35 percent

Landform: Backslopes on hills in the uplands

70040—Cliquot-Bolivar complex, 3 to 8 percent slopes

Map Unit Setting

Landform: Ridges on uplands

Component Description

Cliquot

Percent of the map unit: 55 percent

Parent material: Colluvium over clayey residuum derived from sandstone and shale

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Deep (40 to 60 inches)

Surface runoff class: High

Depth to restrictive feature: 40 to 60 inches to bedrock (paralithic)

Component Hydrologic Properties

Flooding: None

Current depth to water table: 42 to 54 inches

Drainage class: Moderately well drained

Typical Profile

A—0 to 3 inches; fine sandy loam

E—3 to 13 inches; very gravelly fine sandy loam

2Bt1—13 to 20 inches; clay

2Bt2—20 to 31 inches; channery clay

2Bt3—31 to 41 inches; channery clay

2Cr—41 to 48 inches; weathered bedrock

2R—48 to 80 inches; unweathered bedrock

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Bolivar

Percent of the map unit: 35 percent

Position on the landform: Summits

Parent material: Residuum derived from sandstone

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Moderately deep (20 to 40 inches)

Surface runoff class: Very high

Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)

Component Hydrologic Properties*Flooding:* None*Current depth to water table:* More than 6 feet*Drainage class:* Well drained**Typical Profile**

Ap—0 to 7 inches; fine sandy loam

E—7 to 13 inches; fine sandy loam

Bt1—13 to 18 inches; gravelly sandy clay loam

Bt2—18 to 26 inches; very flaggy sandy clay loam

Cr—26 to 38 inches; weathered bedrock

R—38 to 80 inches; unweathered bedrock

Detailed profile descriptions are given in the “Classification of the Soils” section. Additional information is provided in the tables described under the heading “Soil Properties.”

Additional Components**Basehor and similar soils***Estimated percent of the map unit:* 0 to 5 percent*Slope range:* 3 to 15 percent*Landform:* Backslopes on hills in the uplands**Hobson and similar soils***Estimated percent of the map unit:* 0 to 3 percent*Slope range:* 1 to 3 percent*Landform:* Summits on ridges in the uplands**70041—Goss very gravelly silt loam, 8 to 15 percent slopes****Map Unit Setting***Landform:* Hills on uplands**Component Description****Goss***Percent of the map unit:* 90 percent*Parent material:* Gravelly colluvium over clayey residuum derived from cherty limestone*Slope shape:* Convex**Component Properties and Qualities***Depth to bedrock:* Very deep (more than 60 inches)*Surface runoff class:* Medium*Depth to restrictive feature:* More than 60 inches**Component Hydrologic Properties***Flooding:* None*Current depth to water table:* More than 6 feet*Drainage class:* Well drained**Typical Profile**

Ap—0 to 5 inches; very gravelly silt loam

E—5 to 16 inches; very cobbly silt loam

Bt1—16 to 22 inches; very cobbly silty clay loam

2Bt2—22 to 30 inches; very cobbly silty clay

2Bt3—30 to 60 inches; very cobbly clay

Detailed profile descriptions are given in the “Classification of the Soils” section. Additional information is provided in the tables described under the heading “Soil Properties.”

Additional Components**Wilderness and similar soils***Estimated percent of the map unit:* 0 to 5 percent*Slope range:* 3 to 8 percent*Landform:* Shoulders on ridges in the uplands**Sonsac and similar soils***Estimated percent of the map unit:* 0 to 3 percent*Slope range:* 3 to 15 percent*Landform:* Backslopes on hills in the uplands**Moko and similar soils***Estimated percent of the map unit:* 0 to 2 percent*Slope range:* 3 to 15 percent*Landform:* Backslopes on hills in the uplands**70042—Goss very gravelly silt loam, 15 to 35 percent slopes****Map Unit Setting***Landform:* Hills on uplands**Component Description****Goss***Percent of the map unit:* 85 percent*Position on the landform:* Backslopes*Parent material:* Gravelly colluvium over clayey residuum derived from cherty limestone*Slope shape:* Convex**Component Properties and Qualities**

Depth to bedrock: Very deep (more than 60 inches)

Surface runoff class: Medium

Depth to restrictive feature: More than 60 inches

Component Hydrologic Properties

Flooding: None

Current depth to water table: More than 6 feet

Drainage class: Well drained

Typical Profile

A—0 to 2 inches; very gravelly silt loam

E—2 to 10 inches; very gravelly silt loam

BE—10 to 16 inches; very gravelly silt loam

Bt1—16 to 55 inches; very gravelly silty clay loam

2Bt2—55 to 68 inches; very gravelly clay

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Additional Components

Sonsac and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 15 to 35 percent

Landform: Backslopes on hills in the uplands

Moko and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 15 to 35 percent

Landform: Backslopes on hills in the uplands

Pomme and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 3 to 8 percent

Landform: Summits on strath terraces in river valleys

70043—Sonsac-Moko-Rock outcrop complex, 3 to 15 percent slopes

Map Unit Setting

Landform: Hills on uplands

Component Description

Sonsac

Percent of the map unit: 50 percent

Position on the landform: Backslopes

Parent material: Gravelly colluvium over clayey residuum derived from cherty limestone

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Moderately deep (20 to 40 inches)

Surface runoff class: Very high

Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)

Component Hydrologic Properties

Flooding: None

Current depth to water table: More than 6 feet

Drainage class: Well drained

Typical Profile

A—0 to 3 inches; very cobbly silt loam

BA—3 to 6 inches; very cobbly silt loam

Bt—6 to 9 inches; very cobbly silty clay loam

2Bt—9 to 31 inches; very cobbly clay

2R—31 to 80 inches; unweathered bedrock

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Moko

Percent of the map unit: 25 percent

Position on the landform: Backslopes

Parent material: Gravelly residuum derived from cherty limestone

Slope shape: Concave

Component Properties and Qualities

Depth to bedrock: Very shallow and shallow (4 to 20 inches)

Surface runoff class: Very high

Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)

Component Hydrologic Properties

Flooding: None

Current depth to water table: More than 6 feet

Drainage class: Well drained

Typical Profile

A1—0 to 5 inches; very gravelly silty clay loam

A2—5 to 12 inches; very gravelly silty clay loam

R—12 to 80 inches; unweathered bedrock

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Rock outcrop

Percent of the map unit: 15 percent

Additional Components

Goss and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 8 to 15 percent

Landform: Backslopes on hills in the uplands

Wilderness and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 3 to 8 percent

Landform: Shoulders on ridges in the uplands

70044—Sonsac-Moko complex, 15 to 35 percent slopes, rocky

Map Unit Setting

Landform: Hills on uplands

Component Description

Sonsac

Percent of the map unit: 60 percent

Position on the landform: Backslopes

Parent material: Gravelly colluvium over clayey residuum derived from cherty limestone

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Moderately deep (20 to 40 inches)

Surface runoff class: Very high

Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)

Component Hydrologic Properties

Flooding: None

Current depth to water table: More than 6 feet

Drainage class: Well drained

Typical Profile

A—0 to 4 inches; gravelly silt loam

BE—4 to 13 inches; very gravelly silt loam

Bt—13 to 22 inches; extremely cobbly silty clay loam

2Bt—22 to 37 inches; very cobbly clay

2R—37 to 80 inches; unweathered bedrock

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Moko

Percent of the map unit: 30 percent

Position on the landform: Backslopes

Parent material: Gravelly residuum derived from cherty limestone

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very shallow and shallow (4 to 20 inches)

Surface runoff class: Very high

Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)

Component Hydrologic Properties

Flooding: None

Current depth to water table: More than 6 feet

Drainage class: Well drained

Typical Profile

A1—0 to 6 inches; gravelly silt loam

A2—6 to 14 inches; very gravelly silty clay loam

R—14 to 80 inches; unweathered bedrock

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Additional Components

Goss and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 15 to 35 percent

Landform: Backslopes on hills in the uplands

Pomme and similar soils

Estimated percent of the map unit: 0 to 4 percent

Slope range: 3 to 8 percent

Landform: Summits on strath terraces in river valleys

Rock outcrop

Estimated percent of the map unit: 0 to 1 percent

70047—Wanda silt loam, 2 to 5 percent slopes

Map Unit Setting

Landform: Paleoterraces in river valleys

Component Description

Wanda

Percent of the map unit: 90 percent

Position on the landform: Footslopes

Parent material: Loess over gravelly colluvium

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Surface runoff class: Low

Depth to restrictive feature: More than 60 inches

Component Hydrologic Properties

Flooding: None

Current depth to water table: More than 6 feet

Drainage class: Well drained

Typical Profile

Ap—0 to 15 inches; silt loam

Bt1—15 to 26 inches; silty clay loam

Bt2—26 to 44 inches; silty clay loam

2Bt3—44 to 60 inches; gravelly silty clay loam

Detailed profile descriptions are given in the “Classification of the Soils” section. Additional information is provided in the tables described under the heading “Soil Properties.”

Additional Components

Bona and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 3 to 8 percent

Landform: Shoulders on ridges in the uplands

Hoberg and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 2 to 5 percent

Landform: Summits on ridges in the uplands

70048—Alsup silt loam, 8 to 15 percent slopes, very stony

Map Unit Setting

Landform: Hills on uplands

Component Description

Alsup

Percent of the map unit: 90 percent

Position on the landform: Backslopes

Parent material: Colluvium over clayey residuum derived from shale and siltstone

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Deep (40 to 60 inches)

Surface runoff class: Medium

Percent of surface covered by rock fragments: 1 to 3 percent (subangular flagstones)

Depth to restrictive feature: 40 to 60 inches to bedrock (paralithic)

Component Hydrologic Properties

Flooding: None

Current depth to water table: 30 to 48 inches

Drainage class: Moderately well drained

Typical Profile

A—0 to 5 inches; silt loam

E—5 to 14 inches; gravelly silt loam

BE—14 to 24 inches; very gravelly silt loam

2Bt—24 to 50 inches; silty clay

2Cr—50 to 60 inches; weathered shale

Detailed profile descriptions are given in the “Classification of the Soils” section. Additional information is provided in the tables described under the heading “Soil Properties.”

Additional Components

Hartville and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 3 to 8 percent

Landform: Footslopes on paleoterraces in river valleys

Goss and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 8 to 15 percent

Landform: Backslopes on hills in the uplands

70052—Arnica loam, 2 to 5 percent slopes

Map Unit Setting

Landform: Paleoterraces in river valleys

Component Description

Arnica

Percent of the map unit: 90 percent

Parent material: Loamy colluvium

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Surface runoff class: Low

Depth to restrictive feature: More than 60 inches

Component Hydrologic Properties

Flooding: None

Current depth to water table: 24 to 42 inches

Drainage class: Moderately well drained

Typical Profile

Ap—0 to 6 inches; loam

Bt1—6 to 14 inches; clay loam
 Bt2—14 to 23 inches; loam
 Bt3—23 to 80 inches; clay loam

Detailed profile descriptions are given in the “Classification of the Soils” section. Additional information is provided in the tables described under the heading “Soil Properties.”

Additional Components

Saturated soils

Estimated percent of the map unit: 0 to 5 percent

Pomme and similar soils

Estimated percent of the map unit: 0 to 5 percent
Slope range: 1 to 3 percent
Landform: Summits on strath terraces in river valleys

70053—Courtois silt loam, 2 to 5 percent slopes

Map Unit Setting

Landform: Strath terraces in river valleys

Component Description

Courtois

Percent of the map unit: 100 percent
Position on the landform: Treads
Parent material: Loess over gravelly colluvium over clayey residuum
Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)
Surface runoff class: Low
Depth to restrictive feature: More than 60 inches

Component Hydrologic Properties

Flooding: None
Current depth to water table: More than 6 feet
Drainage class: Well drained

Typical Profile

Ap—0 to 4 inches; silt loam
 Bt—4 to 30 inches; silty clay loam
 2Bt—30 to 49 inches; extremely stony clay
 3Bt—49 to 80 inches; stony clay

Detailed profile descriptions are given in the “Classification of the Soils” section. Additional information is provided in the tables described under the heading “Soil Properties.”

70054—Cliquot gravelly loam, 3 to 20 percent slopes, very stony

Map Unit Setting

Landform: Hills on uplands

Component Description

Cliquot

Percent of the map unit: 90 percent
Position on the landform: Backslopes
Parent material: Colluvium over clayey residuum derived from sandstone and shale
Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Deep (40 to 60 inches)
Surface runoff class: High
Percent of surface covered by rock fragments: 0.10 to 3.0 percent (stones)
Depth to restrictive feature: 40 to 60 inches to bedrock (paralithic)

Component Hydrologic Properties

Flooding: None
Current depth to water table: 42 to 54 inches
Drainage class: Moderately well drained

Typical Profile

A—0 to 4 inches; gravelly loam
 BE—4 to 10 inches; very gravelly loam
 2Bt1—10 to 41 inches; clay
 2Bt2—41 to 48 inches; channery silty clay
 2BC—48 to 55 inches; very channery silty clay
 2Cr—55 to 80 inches; weathered bedrock

Detailed profile descriptions are given in the “Classification of the Soils” section. Additional information is provided in the tables described under the heading “Soil Properties.”

Additional Components

Bolivar and similar soils

Estimated percent of the map unit: 0 to 5 percent
Slope range: 3 to 8 percent
Landform: Summits on ridges in the uplands

Collinsville and similar soils

Estimated percent of the map unit: 0 to 5 percent
Slope range: 3 to 15 percent
Landform: Backslopes on hills in the uplands

71254—Cotter silt loam, 0 to 2 percent slopes, rarely flooded**Map Unit Setting**

Landform: Flood-plain steps in river valleys

Component Description**Cotter**

Percent of the map unit: 95 percent

Parent material: Alluvium

Slope shape: Linear

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Surface runoff class: Negligible

Depth to restrictive feature: More than 60 inches

Component Hydrologic Properties

Flooding frequency: Rare

Current depth to water table: More than 6 feet

Drainage class: Well drained

Typical Profile

Ap—0 to 10 inches; silt loam

Bt—10 to 33 inches; silt loam

2Btb—33 to 80 inches; silty clay loam

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Additional Components**Moniteau and similar soils**

Estimated percent of the map unit: 0 to 5 percent

Slope range: 0 to 2 percent

Landform: Treads on stream terraces in river valleys

71750—Cleora fine sandy loam, 0 to 2 percent slopes, frequently flooded**Map Unit Setting**

Landform: Flood plains in river valleys

Component Description**Cleora**

Percent of the map unit: 90 percent

Parent material: Alluvium

Slope shape: Linear

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Surface runoff class: Negligible

Depth to restrictive feature: More than 60 inches

Component Hydrologic Properties

Flooding frequency: Frequent

Current depth to water table: More than 6 feet

Drainage class: Well drained

Typical Profile

Ap—0 to 12 inches; fine sandy loam

Bw—12 to 22 inches; fine sandy loam

C—22 to 80 inches; loam

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Additional Components**Moniteau and similar soils**

Estimated percent of the map unit: 0 to 5 percent

Slope range: 0 to 2 percent

Landform: Treads on stream terraces in river valleys

Sturkie and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 0 to 2 percent

Landform: Flood plains in river valleys

73000—Pomme silt loam, 3 to 8 percent slopes**Map Unit Setting**

Landform: Strath terraces in river valleys

Component Description**Pomme**

Percent of the map unit: 85 percent

Position on the landform: Summits

Parent material: Loess over gravelly colluvium over clayey residuum derived from cherty limestone

Slope shape: Concave

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Surface runoff class: Medium

Depth to restrictive feature: More than 60 inches

Component Hydrologic Properties

Flooding: None

Current depth to water table: More than 6 feet

Drainage class: Well drained

Typical Profile

Ap—0 to 7 inches; silt loam
 Bt1—7 to 19 inches; silty clay loam
 2Bt2—19 to 57 inches; very gravelly silty clay loam
 3Bt3—57 to 86 inches; extremely gravelly clay

Detailed profile descriptions are given in the “Classification of the Soils” section. Additional information is provided in the tables described under the heading “Soil Properties.”

Additional Components**Hartville and similar soils**

Estimated percent of the map unit: 0 to 5 percent
Slope range: 3 to 8 percent
Landform: Footslopes on paleoterraces in river valleys

Goss and similar soils

Estimated percent of the map unit: 0 to 5 percent
Slope range: 3 to 8 percent
Landform: Shoulders on ridges in the uplands

Sonsac and similar soils

Estimated percent of the map unit: 0 to 5 percent
Slope range: 3 to 15 percent
Landform: Backslopes on hills in the uplands

73003—Ocie-Gatewood complex, 15 to 35 percent slopes**Map Unit Setting**

Landform: Hills on uplands

Component Description**Ocie**

Percent of the map unit: 45 percent
Position on the landform: Backslopes
Parent material: Gravelly colluvium over clayey residuum derived from dolostone
Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Deep (40 to 60 inches)
Surface runoff class: Very high
Depth to restrictive feature: 40 to 60 inches to bedrock (lithic)

Component Hydrologic Properties

Flooding: None
Current depth to water table: 24 to 60 inches
Drainage class: Moderately well drained

Typical Profile

A—0 to 2 inches; very gravelly silt loam
 E—2 to 14 inches; very gravelly silt loam
 Bt1—14 to 19 inches; very gravelly silty clay loam
 2Bt2—19 to 44 inches; clay
 2R—44 to 80 inches; unweathered bedrock

Detailed profile descriptions are given in the “Classification of the Soils” section. Additional information is provided in the tables described under the heading “Soil Properties.”

Gatewood

Percent of the map unit: 35 percent
Position on the landform: Backslopes
Parent material: Gravelly colluvium over clayey residuum derived from dolostone
Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Moderately deep (20 to 40 inches)
Surface runoff class: Very high
Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)

Component Hydrologic Properties

Flooding: None
Current depth to water table: 18 to 36 inches
Drainage class: Moderately well drained

Typical Profile

A—0 to 4 inches; gravelly silt loam
 E—4 to 7 inches; very gravelly silt loam
 2Bt—7 to 28 inches; gravelly clay
 2R—28 to 80 inches; unweathered bedrock

Detailed profile descriptions are given in the “Classification of the Soils” section. Additional information is provided in the tables described under the heading “Soil Properties.”

Additional Components**Viraton and similar soils**

Estimated percent of the map unit: 0 to 8 percent
Slope range: 3 to 8 percent
Landform: Summits on hills

Moko and similar soils

Estimated percent of the map unit: 0 to 7 percent
Slope range: 3 to 15 percent
Landform: Base slopes on hillsides

Cedargap and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 0 to 3 percent

Landform: Flood plains in river valleys

Areas of dolostone rock outcrop

Estimated percent of the map unit: 0 to 1 percent

73005—Ocie gravelly silt loam, 3 to 15 percent slopes

Map Unit Setting

Landform: Hills on uplands

Component Description

Ocie

Percent of the map unit: 90 percent

Position on the landform: Backslopes

Parent material: Gravelly colluvium over clayey residuum derived from dolostone

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Deep (40 to 60 inches)

Surface runoff class: Very high

Percent of surface covered by rock fragments: None

Depth to restrictive feature: 40 to 60 inches to bedrock (paralithic)

Component Hydrologic Properties

Flooding: None

Current depth to water table: 24 to 60 inches

Drainage class: Moderately well drained

Typical Profile

A—0 to 4 inches; gravelly silt loam

E—4 to 10 inches; very gravelly silt loam

Bt—10 to 19 inches; very gravelly silt loam

2Bt—19 to 52 inches; gravelly clay

2Cr—52 to 60 inches; weathered bedrock

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Additional Components

Viraton and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 3 to 8 percent

Landform: Summits on hills

Cedargap and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 0 to 3 percent

Landform: Flood plains in river valleys

73007—Plato silt loam, 1 to 3 percent slopes

Map Unit Setting

Landform: Ridges on uplands

Component Description

Plato

Percent of the map unit: 95 percent

Position on the landform: Summits

Parent material: Loess over colluvium over residuum derived from cherty limestone

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Surface runoff class: Low

Depth to restrictive feature: 24 to 36 inches to a fragipan

Component Hydrologic Properties

Flooding: None

Current depth to water table: 12 to 24 inches

Drainage class: Somewhat poorly drained

Typical Profile

Ap—0 to 5 inches; silt loam

E—5 to 9 inches; silt loam

Bt—9 to 29 inches; silty clay

2Btx—29 to 60 inches; silt loam

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Additional Components

Hartville and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 3 to 8 percent

Landform: Footslopes on paleoterraces in river valleys

73008—Viraton silt loam, 2 to 5 percent slopes

Map Unit Setting

Landform: Ridges on uplands

Component Description

Viraton

Percent of the map unit: 95 percent

Position on the landform: Summits

Parent material: Fine-loamy colluvium over gravelly colluvium over clayey residuum derived from cherty limestone

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Surface runoff class: High

Depth to restrictive feature: 18 to 33 inches to a fragipan

Component Hydrologic Properties

Flooding: None

Current depth to water table: 18 to 30 inches

Drainage class: Moderately well drained

Typical Profile

Ap—0 to 6 inches; silt loam

Bt—6 to 21 inches; silt loam

2Btx—21 to 30 inches; very gravelly silty clay loam

3Bt—30 to 60 inches; gravelly clay

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Additional Components

Goss and similar soils

Estimated percent of the map unit: 0 to 3 percent

Slope range: 3 to 8 percent

Landform: Shoulders on ridges in the uplands

Plato and similar soils

Estimated percent of the map unit: 0 to 2 percent

Slope range: 1 to 3 percent

Landform: Summits on hills

73059—Pomme silt loam, 1 to 3 percent slopes

Map Unit Setting

Landform: Strath terraces in river valleys

Component Description

Pomme

Percent of the map unit: 85 percent

Position on the landform: Summits

Parent material: Loess over gravelly colluvium over clayey residuum derived from cherty limestone

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Surface runoff class: Low

Depth to restrictive feature: More than 60 inches

Component Hydrologic Properties

Flooding: None

Current depth to water table: More than 6 feet

Drainage class: Well drained

Typical Profile

Ap—0 to 8 inches; silt loam

Bt—8 to 26 inches; silt loam

2Bt—26 to 44 inches; gravelly loam

3Bt—44 to 72 inches; gravelly clay

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Additional Components

Goss and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 3 to 8 percent

Landform: Shoulders on ridges in the uplands

Hartville and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 3 to 8 percent

Landform: Footslopes on paleoterraces in river valleys

Sonsac and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 3 to 15 percent

Landform: Backslopes on hills in the uplands

73075—Hobson loam, 1 to 3 percent slopes

Map Unit Setting

Landform: Ridges on uplands

Component Description

Hobson

Percent of the map unit: 90 percent

Position on the landform: Summits

Parent material: Loamy colluvium over residuum derived from sandstone and shale

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Surface runoff class: High

Depth to restrictive feature: 18 to 27 inches to a fragipan

Component Hydrologic Properties

Flooding: None

Current depth to water table: 18 to 36 inches

Drainage class: Moderately well drained

Typical Profile

Ap—0 to 4 inches; loam

E—4 to 8 inches; loam

Bt—8 to 19 inches; loam

2Btx—19 to 40 inches; clay loam

3Bt—40 to 72 inches; clay loam

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Additional Components

Bolivar and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 3 to 8 percent

Landform: Summits on ridges in the uplands

Cliquot and similar soils

Estimated percent of the map unit: 0 to 3 percent

Slope range: 3 to 8 percent

Landform: Summits on ridges in the uplands

Soils that have a clayey subsoil

Estimated percent of the map unit: 0 to 2 percent

Slope range: 1 to 3 percent

74625—Hartville silt loam, 3 to 8 percent slopes

Map Unit Setting

Landform: Paleoterraces in river valleys

Component Description

Hartville

Percent of the map unit: 90 percent

Parent material: Silty alluvium over clayey colluvium

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Surface runoff class: High

Depth to restrictive feature: More than 60 inches

Component Hydrologic Properties

Flooding: None

Current depth to water table: 18 to 36 inches

Drainage class: Somewhat poorly drained

Typical Profile

Ap—0 to 6 inches; silt loam

BE—6 to 10 inches; silt loam

Bt—10 to 31 inches; silty clay

2Bt—31 to 60 inches; silty clay loam

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Additional Components

Alsop and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 8 to 15 percent

Landform: Backslopes on hills in the uplands

Pomme and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 3 to 8 percent

Landform: Summits on strath terraces in river valleys

74641—Secesh silt loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

Landform: Flood-plain steps in river valleys

Component Description

Secesh

Percent of the map unit: 95 percent

Parent material: Loamy alluvium over gravelly residuum derived from cherty limestone

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Surface runoff class: Low

Depth to restrictive feature: More than 60 inches

Component Hydrologic Properties

Flooding frequency: Occasional

Current depth to water table: More than 6 feet

Drainage class: Well drained

Typical Profile

Ap—0 to 8 inches; silt loam

BA—8 to 14 inches; silt loam

Bt—14 to 24 inches; loam

2Bt—24 to 60 inches; gravelly clay loam

Detailed profile descriptions are given in the “Classification of the Soils” section. Additional information is provided in the tables described under the heading “Soil Properties.”

Additional Components

Dameron and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 0 to 3 percent

Landform: Flood plains in river valleys

75375—Horsecreek silt loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

Landform: Stream terraces in river valleys

Component Description

Horsecreek

Percent of the map unit: 88 percent

Parent material: Fine-silty alluvium

Slope shape: Linear

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Surface runoff class: Low

Depth to restrictive feature: More than 60 inches

Component Hydrologic Properties

Flooding frequency: Occasional

Current depth to water table: More than 6 feet

Drainage class: Well drained

Typical Profile

Ap—0 to 9 inches; silt loam

A—9 to 18 inches; silt loam

Bt—18 to 60 inches; silt loam

Detailed profile descriptions are given in the “Classification of the Soils” section. Additional information is provided in the tables described under the heading “Soil Properties.”

Additional Components

Racket and similar soils

Estimated percent of the map unit: 0 to 3 percent

Slope range: 0 to 3 percent

Landform: Flood plains in river valleys

Pomme and similar soils

Estimated percent of the map unit: 0 to 3 percent

Slope range: 1 to 3 percent

Landform: Treads on strath terraces in river valleys

Moniteau and similar soils

Estimated percent of the map unit: 0 to 3 percent

Slope range: 0 to 2 percent

Landform: Treads on stream terraces in river valleys

Sturkie and similar soils

Estimated percent of the map unit: 0 to 3 percent

Slope range: 0 to 2 percent

Landform: Flood plains in river valleys

75377—Racket silt loam, 0 to 3 percent slopes, frequently flooded

Map Unit Setting

Landform: Flood plains in river valleys

Component Description

Racket

Percent of the map unit: 90 percent

Parent material: Loamy alluvium

Slope shape: Linear

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Surface runoff class: Low

Depth to restrictive feature: More than 60 inches

Component Hydrologic Properties

Flooding frequency: Frequent (fig. 7)

Current depth to water table: More than 6 feet

Drainage class: Well drained

Typical Profile

A1—0 to 10 inches; silt loam

A2—10 to 24 inches; loam

Bw—24 to 38 inches; silt loam

2C—38 to 60 inches; gravelly sandy loam

Detailed profile descriptions are given in the



Figure 7.—Flooding is a hazard in areas of Racket silt loam, 0 to 3 percent slopes, frequently flooded.

“Classification of the Soils” section. Additional information is provided in the tables described under the heading “Soil Properties.”

Additional Components

Cedargap and similar soils

Estimated percent of the map unit: 0 to 4 percent
Slope range: 0 to 3 percent
Landform: Flood plains in river valleys

Humansville and similar soils

Estimated percent of the map unit: 0 to 5 percent
Slope range: 0 to 2 percent
Landform: Flood plains in river valleys

Horsecreek and similar soils

Estimated percent of the map unit: 0 to 5 percent
Slope range: 0 to 2 percent
Landform: Treads on stream terraces in river valleys

Sturkie and similar soils

Estimated percent of the map unit: 0 to 3 percent

Slope range: 0 to 2 percent

Landform: Flood plains in river valleys

75378—Sturkie silt loam, 0 to 2 percent slopes, frequently flooded***Map Unit Setting***

Landform: Flood plains in river valleys

Component Description**Sturkie**

Percent of the map unit: 90 percent

Parent material: Silty alluvium

Slope shape: Linear

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Surface runoff class: Negligible

Depth to restrictive feature: More than 60 inches

Component Hydrologic Properties

Flooding frequency: Frequent

Current depth to water table: More than 6 feet

Drainage class: Well drained

Typical Profile

Ap—0 to 9 inches; silt loam

A—9 to 19 inches; silt loam

Bw—19 to 60 inches; silt loam

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional information is provided in the tables described under the heading "Soil Properties."

Additional Components**Horsecreek and similar soils**

Estimated percent of the map unit: 0 to 4 percent

Slope range: 0 to 2 percent

Landform: Treads on stream terraces in river valleys

Moniteau and similar soils

Estimated percent of the map unit: 0 to 3 percent

Slope range: 0 to 2 percent

Landform: Treads on stream terraces in river valleys

Cedargap and similar soils

Estimated percent of the map unit: 0 to 3 percent

Slope range: 0 to 3 percent

Landform: Flood plains in river valleys

99000—Pits, quarries***General Description***

- This map unit consists of areas from which limestone, dolostone, and sandstone have been quarried. The areas typically are 4 to 10 acres in size. The quarries include the areas that are being excavated and the surrounding areas used for stockpiling, quarrying activities, and equipment.

Component Description**Pits, quarries**

Percent of the map unit: 95 percent

Additional Components**Processed/stockpiled stone**

Estimated percent of the map unit: 0 to 5 percent

99001—Water***Component Description***

- This map unit consists of naturally occurring basins of surface water, such as perennial rivers and creeks. It also includes manmade lakes and ponds that are larger than 5 acres.

99004—Kanima very channery silt loam, 8 to 50 percent slopes***Map Unit Setting***

Landform: Hills on uplands

Component Description**Kanima**

Percent of the map unit: 100 percent

Position on the landform: Backslopes

Parent material: Loamy mine spoil or earthy fill derived from sandstone and shale

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Surface runoff class: High

Depth to restrictive feature: More than 60 inches

Component Hydrologic Properties

Flooding: None

Current depth to water table: More than 6 feet

Drainage class: Well drained

Typical Profile

A—0 to 8 inches; very channery silt loam

C—8 to 60 inches; very channery silt loam

Detailed profile descriptions are given in the "Classification of the Soils" section. Additional

information is provided in the tables described under the heading "Soil Properties."

99007—Dam***General Description***

- This map unit consists of an earthen and concrete structure built by the U.S. Army Corps of Engineers. Stockton Lake is a body of water created within the flood pool area of Stockton Dam.

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis for predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as forestland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; for waste management; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment. The survey can help planners to maintain or create a land use pattern that is in harmony with nature.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Interpretive Ratings

The interpretive tables in this survey rate the soils in the survey area for various land uses. Many of the tables identify the limitations that affect specified uses and indicate the severity of those limitations. The ratings in these tables are both verbal and numerical.

Rating Class Terms

Rating classes are expressed in the tables in terms that indicate the extent to which the soils are limited or not limited by all of the soil features that affect a specified use. Terms for the limitation classes are *not limited*, *slightly limited*, *moderately limited*, *limited*, and *very limited*. In certain tables the soils are rated as *improbable*, *possible*, or *probable* sources of specific materials used for construction purposes.

Numerical Ratings

Numerical ratings in the tables indicate the severity of individual limitations. They also indicate the overall degree to which a soil is limited or not limited for a specific use. The numerical ratings are shown as decimal fractions ranging from 0.00 to 1.00. Limitation classes are assigned as follows:

Not limited	0.00
Slightly limited	0.01 to 0.30
Moderately limited	0.31 to 0.60
Limited	0.61 to 0.99
Very limited	1.00

The numerical ratings used to express the severity of individual limitations indicate gradations between the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation.

In tables that use limitation class terms, such as *very limited* or *limited*, the limitation class terms and numerical ratings are shown for each limiting soil feature listed. As many as three soil features may be listed for each map unit component. The overall limitation rating for the component is based on the most severe limitation.

Crops and Pasture

Drexel R. Atkisson, district conservationist, Natural Resources Conservation Service, helped prepare this section.

General management needed for crops and pasture is suggested in this section. Prime farmland is

described, the estimated yields of the main crops and pasture plants are listed, and the system of land capability classification used by the Natural Resources Conservation Service is explained.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading "Detailed Soil Map Units." Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

In 1990, approximately 180,725 acres in Cedar County was used for crops or for hay and pasture. Of this total, about 137,500 acres was permanent pasture for hay and fescue seed production (fig. 8) and 43,125 acres was used for cultivated crops, mainly soybeans, corn, grain sorghum, and wheat. Rye, barley, oats, sunflowers, cucumbers, and various types of melons also are grown. Most of the remainder of the acreage in Cedar County is Federal and State land, areas of water, urban areas, forestland, and roads.

The potential of the soils in Cedar County for sustained production of food is good. About 19 percent of the county is prime farmland. An additional 11 percent is subject to occasional flooding but is considered prime farmland in areas that are drained or protected from flooding. Cropland is on uplands. Applying farming practices that cause excessive erosion prevents sustained production over long periods of time. Some of the marginal cropland is used for row crops. These acres should be converted to pasture or hayland or used in rotation with grasses and/or legumes.

Water erosion is the major problem on nearly all sloping cropland and overgrazed pasture in Cedar County. All soils that have slopes of more than 2 percent are susceptible to erosion. Even soils that have long slopes of 2 percent or less can be susceptible to severe erosion during intense spring rains if tillage is excessive and crop residue is removed.

Loss of the surface layer through erosion is damaging for two main reasons. First, productivity is reduced as the surface layer is lost and part of the subsoil is incorporated into the plow layer. Loss of the surface layer is especially damaging on soils that have a clayey subsoil, such as Barden and Sylvania soils. Erosion also reduces the productivity of droughty soils that have a fragipan layer or soils that are shallow to bedrock. Examples are Crelton and Moko soils. Second, erosion on farmland results in the sedimentation of streams, lakes, and ponds. Controlling erosion minimizes the pollution of these areas by sediment and improves the quality of water

for municipal and recreational uses and for fish and wildlife. Erosion-control practices also prolong the use of lakes and ponds by preventing them from filling with sediment, and they reduce the cost of cleaning road ditches.

The benefits of erosion-control practices are numerous. Practices that provide the most benefits are conservation tillage, which involves crop residue management, and cropping sequences that include small grain crops and meadow. These practices reduce the runoff rate, increase the rate of water infiltration, and improve soil tilth and soil productivity. A cropping system that keeps a cover of vegetation or crop residue on the soil surface can hold soil losses to a level that will not reduce the long-term productivity of the soil. A crop rotation that includes grasses and legumes for pasture and hay is very effective in controlling erosion. Legumes, such as clover and alfalfa, also provide nitrogen for the subsequent crop.

The cropland soils generally are well suited to the construction of gradient broadbase terraces. These terraces reduce the length of the slope, which is the most limiting factor for erosion control on the Cherokee Prairie. By reducing the length of the slope, the velocity and quantity of overland flow are reduced during peak runoff periods. Conventional terraces are most practical in areas of uneroded upland soils, such as Crelton and Barden soils. Special management techniques may be needed if terracing exposes the clayey subsoil.

Contour stripcropping and conservation tillage systems are alternatives to terracing. Contour stripcropping can reduce the length of the slope. This practice involves alternating strips of row crops with strips of small grain or hay. The water flow is slowed down and filtered through the grass buffer. The strips of grasses or grasses and legumes are usually used for hay. The areas between the strips are cultivated and planted to row crops, which are grown on the contour. Conservation tillage is another effective method of controlling erosion on sloping land. The use of crop residue to control erosion is increasing in the county. This practice can be used on many of the soils. No-till systems also are used in the county. These systems minimize the disturbance of the soil surface and reduce the hazard of erosion.

Soil tilth is affected by the texture and organic matter content of the surface layer. Most of the uneroded upland soils used for crops in the survey area have a surface layer of silt loam and a medium or low content of organic matter. Generally, the granular structure of the silt loam soils becomes weaker as a result of tillage and compaction. A dense crust may



Figure 8.—Pastureland in an area of Pomme silt loam, 3 to 8 percent slopes. Moniteau silt loam, 0 to 2 percent slopes, occasionally flooded, is in the background.

form in areas of these soils. This crust is hard when dry. It reduces the rate of water infiltration, hinders seed germination, and increases the runoff rate. Crop residue management, including no-till farming, is effective in maintaining the content of organic matter and improving tilth and soil structure.

Soil fertility is naturally lower in most of the eroded soils or the soils that have a lighter colored surface layer. Additional plant nutrients are needed on all soils before maximum production can be achieved. Most of the soils in the county are naturally acid in the upper part of the root zone. As a result, applications of ground limestone or ground dolomite are needed to raise the pH, calcium, and magnesium levels sufficiently for optimum growth of legumes. Additions of lime and fertilizer should be based on the results of current soil tests, on the needs of the crop, and on the

desired level of yields. The Cooperative Extension Service and some private farm service firms can help in determining the kinds and amounts of fertilizer and lime to be applied.

Pasture and hayland forage crops suited to the soils and climate in Cedar County include legumes, cool-season grasses, and warm-season grasses (fig. 9). Alfalfa and red clover are the most common legumes grown for hay. Deep, well drained soils that have a high available water capacity and a high content of calcium, magnesium, and potassium, such as Wanda and Pomme soils, are well suited to alfalfa for long-term hay or silage. Most of the losses in alfalfa stands are caused by failure to maintain adequate levels of calcium and potassium in the soil. Soils that have a fragipan, such as Viraton and Hoberg soils, soils in which the depth to bedrock is limited, such as Sonsac



Figure 9.—Warm-season grasses in an area of Barco-Sylvania complex, 2 to 5 percent slopes.

and Bolivar soils, and soils that are subject to seasonal wetness, such as Cliquot and Barden soils, are better suited to clover for hay or pasture. Most of the soils in the county support red clover and ladino clover and can also support other clovers if proper levels of lime and fertility are maintained. Most soils are suited to tall fescue, orchardgrass, and other cool-

season grasses. These grasses grow best in the spring, early summer, and fall. If additional midsummer pasture or hay is needed, warm-season grasses and legumes can be grown.

Warm-season grasses, such as big bluestem, bermudagrass, indiagrass, switchgrass, Caucasian bluestem, and eastern gamma grass, are suited to a

wide range of soil conditions. These grasses grow best from late spring to early fall and thus fill the “summer slump” period left by the cool-season grasses with green, actively growing forage. For both cool-season and warm-season grasses, proper management is needed for the highest production rate.

Hayland management varies with each forage type, but some general rules can be applied in managing all grasses and legumes. Fertility levels should be maintained based on forage type, production, and soil testing. Cutting heights, cutting intervals, and stage of growth can vary depending on the forage type. As forage stands mature, the quantity increases but the quality may decrease. These issues should be considered when hayland management decisions are made.

Proper pasture management eliminates overgrazing and maintains a healthy stand of forage crops. Dividing pastures into smaller units and rotating livestock allow the plants to rest and recover from grazing pressure. Keeping pastures small can also minimize selective or “spot” grazing and thus provides for the maintenance of the legumes in the grass stand. The Natural Resources Conservation Service and the Cooperative Extension Service can provide information on hayland and pasture management based on forage type.

Prime Farmland

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no

rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

About 94,903 acres in the county, or nearly 30 percent of the total acreage, meets the soil requirements for prime farmland.

A recent trend in land use in some parts of the survey area has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

The map units in the survey area that are considered prime farmland are listed in table 5. This list does not constitute a recommendation for a particular land use. On some soils included in the list, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures. The extent of each listed map unit is shown in table 4. The location is shown on the detailed soil maps. The soil qualities that affect use and management are described under the heading “Detailed Soil Map Units.”

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 6. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification of map units in the survey area also is shown in the table.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects;

favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 6 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for forestland or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit (USDA, 1961). Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have slight limitations that restrict their use.

Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that

restrict the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, 2*e*. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w*, *s*, or *c* because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, forestland, wildlife habitat, or recreation.

The capability classification of map units in this survey area is given in table 6.

Pasture and Hayland Suitability Groups

The soils in Cedar County are assigned to a pasture and hayland group according to their suitability for pasture management.

Many different pasture and hayland suitability groups are in the survey area. Over time, the combination of plants best suited to a particular soil and climate has or will become dominant. Plant communities are not static but vary slightly from year to year and from place to place.

The relationship between soils and vegetation was ascertained during this survey. Thus, pasture and hayland suitability groups generally can be determined

directly from the soil map. Soil properties that affect moisture supply and plant nutrients have the greatest influence on the productivity of each plant species. Soil reaction, salt content, and a seasonal high water table also are important. The "Field Office Technical Guide," which is available at local offices of the Natural Resources Conservation Service, can provide specific information about pasture and hayland suitability groups.

Table 7 shows, for each soil, the assigned pasture and hayland suitability group. Specific concerns and recommendations affecting pasture and hayland management for each group are described in the following paragraphs.

Group WLB—Wet Loamy Bottom. A seasonal high water table and flooding are the main management concerns. Plants should be selected accordingly. A seedbed can be easily prepared. A drainage system can improve the growth of deep-rooted species. The hazard of flooding should be considered when a grazing system is designed.

Group WCB—Wet Clayey Bottom. Wetness and flooding are the main management concerns. The soils in this group are poorly suited to hay. The hazard of flooding should be considered when a grazing system is designed. Maintaining stands of desirable species is difficult in depressional areas. A drainage system can improve the growth of deep-rooted species.

Group WCU—Wet Clayey Upland. Wetness is the main management concern. Maintaining stands of desirable species is difficult in depressional areas. A drainage system can improve the growth of deep-rooted species.

Group WLO—Wet Loamy Overflow. Wetness and flooding are the main management concerns. A seedbed can be easily prepared. A drainage system can improve the growth of deep-rooted species. The hazard of flooding should be considered when a grazing system is designed.

Group LyO—Loamy Overflow. Flooding is the main management concern. The hazard of flooding should be considered when a grazing system is designed.

Group LyU—Loamy Upland. No serious concerns affect pasture and hayland management. Erosion is a hazard in newly seeded areas. Timely seedbed preparation is needed to ensure a good ground cover.

Group CyU—Clayey Upland. Pasture and hay crops are effective in controlling erosion. Erosion during seedbed preparation is the main concern. Timely tillage and a quickly established ground cover reduce the hazard of erosion. The forage species that are tolerant of wetness grow best. The production of

deep-rooted legumes is limited because of wetness and a restricted rooting depth.

Group GrU—Gravelly Upland. The soils in this group generally are not suited to cultivated crops. Droughtiness and erosion are the main management concerns. Seedbeds should be prepared on the contour. Timely seedbed preparation helps to ensure rapid plant growth and a protective ground cover.

Group MDU—Moderately Deep Upland. Shallow-rooted species that are tolerant of droughtiness should be selected for planting. Erosion is a serious hazard in newly seeded areas. Timely tillage and a quickly established ground cover reduce the hazard of erosion.

Group WtP—Wet Pan. The species that are tolerant of wetness grow best. A dense layer in the subsoil can restrict the rooting depth and result in insufficient soil moisture in dry years. Erosion during seedbed preparation is the main concern. Timely tillage and a quickly established ground cover reduce the hazard of erosion.

Group LyP—Loamy Pan. A few small areas of this group are used for cultivated crops, and some areas are wooded. A dense layer in the subsoil can restrict the rooting depth and result in insufficient soil moisture in dry years. Erosion during seedbed preparation is a hazard. Seedbeds should be prepared on the contour. Timely tillage and a quickly established ground cover reduce the hazard of erosion.

Group GrO—Gravelly Overflow. Most areas of this group have been cleared of trees and are used for pasture and hay. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during periods of flooding help to keep the pasture in good condition.

Group GrP—Gravelly Pan. If the soils in this group are used for improved pasture, chert on the surface hinders tillage. Because of seasonal droughtiness, timely planting is needed to ensure an adequate stand. Erosion is a hazard in newly seeded areas. Timely seedbed preparation helps to ensure a protective ground cover.

Group ShU—Shallow Upland. Most areas of this group are used for native pasture and are best suited to shallow-rooted species. In some areas tillage is nearly impossible. Broadcast seeding may be necessary. The slope and rock outcrop can hinder mowing in places.

Group SyO—Sandy Overflow. The soils in this group tend to be droughty because they are excessively drained, but they are also subject to flooding. Plants should be selected accordingly. A seedbed can be easily prepared. The flooding and the droughtiness should be considered when a grazing

system is designed. Because the soils are subject to flooding and droughtiness at different times, a flexible grazing system is needed.

Group GNS—Generally Not Suited. The soils in this group generally are not suited to pasture and hay. The suitability for forage species and the use of equipment are limited by the slope, a high content of rock fragments, or both.

Forest Productivity and Management

Douglas C. Wallace, forester, Natural Resources Conservation Service, helped prepare this section.

Approximately 87,901 acres in Cedar County, or about 28 percent of the survey area, is forested, according to 1986 woodland survey estimates by the Missouri Department of Conservation (Geissman and others, 1986). Woodland tracts in the county are primarily small or medium, private holdings of less than 300 acres (fig. 10) and consist essentially of unmanaged stands of sawtimber and poletimber size (Smith, 1990). In areas on the flood plains, forests are restricted to long narrow bands bordering streams and rivers.

Tree species and growth rates in the county vary, depending on *site characteristics*, *soil properties*, and *management activities*.

Site characteristics that affect tree growth include aspect and topographic position. These site characteristics influence the amount of available sunlight, air drainage, soil temperature, soil moisture, and relative humidity. Typically, north and east aspects and the lower slope positions, which are cooler and have better moisture conditions than other sites, are the best upland sites for tree growth.

Soil properties that affect the growth of trees include reaction (pH), fertility, drainage, texture, structure, and depth to bedrock. The soil also serves as a reservoir for moisture, provides an anchor for roots, and supplies essential plant nutrients.

Management activities can influence woodland productivity and should be aimed at eliminating factors causing tree stress. Generally, these activities include thinning overstocked young stands; harvesting old, mature trees; and eliminating destructive fire and grazing. Fire and grazing have very negative impacts on forest growth and quality. Although forest fires are no longer a major problem in the county, about 60 percent of the woodland is still subject to grazing. Grazing destroys the leaf layer on the surface, compacts the soil, and destroys or damages tree seedlings. Woodland sites that are not grazed and

have not been burned have the highest potential for optimum timber production and tree growth.

In Cedar County, Alsup, Ocie, Sonsac, Gatewood, and Goss soils are the major soils in areas of forestland in the uplands. Post oak-blackjack oak and black oak forest types are typical on these soils. Other significant forest types include white oak and eastern red cedar-mixed hardwood (Smith, 1990).

Along the major watercourses, Dameron, Moniteau, Horsecreek, and Sturkie soils support bottom-land hardwoods that are adapted to flooding conditions. Many of these sites have been cleared for pasture and crop production. The uncleared wooded areas typically support silver maple, hackberry, American elm, sycamore, cottonwood, and Shumard oak. Bur oak, green ash, and walnut are common along the smaller streams and on the higher terraces along the major streams. A high potential for excellent forest growth exists on these sites.

Upland soils, such as Barden, Bona, Pomme, and Crelton soils, formed under mixed prairie grasses or transitional open forest vegetation and prairie understory. Extra care and maintenance may be needed for the successful establishment of trees on these soils. Special use tree plantings (Christmas trees, nut trees, and fuel wood trees) utilizing adapted tree species can be very successful.

Christmas tree plantings can be established on any soil that is not poorly drained or very poorly drained. The species of trees most suitable for planting in Cedar County are Scotch pine, Virginia pine, red pine, and white pine. Nut trees, such as black walnut and pecan, are suitable for planting in areas of deep, medium textured, moderately well drained and well drained soils, such as Cleora and Horsecreek soils (fig. 11). Other soils are also suited but may be less productive. Tree plantations for fuel wood utilizing rapidly growing trees are feasible in Cedar County. Species most useful for this purpose include green ash, black locust, sycamore, and silver maple.

The tables described in this section can help forest owners or managers plan the use of soils for wood crops. They show the potential productivity of the soils for wood crops and rate the soils according to the limitations that affect various aspects of forest management.

Forest Productivity

In table 8, the *potential productivity* of merchantable or *common trees* on a soil is expressed as a site index and as a volume number. The *site index* is the average height, in feet, that dominant and codominant trees of a given species attain in 50 years. The site index



Figure 10.—Woodland in an area of Cliquot-Bolivar complex, 3 to 8 percent slopes.

applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that forest managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. More detailed information regarding site index is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or through the Agency's Website.

The *volume of wood fiber*, a number, is the yield likely to be produced by the most important tree species. This number, expressed as cubic feet per acre per year and calculated at the age of culmination of the mean annual increment (CMAI), indicates the

amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

Trees to manage are those that are preferred for planting, seeding, or natural regeneration and those that remain in the stand after thinning or partial harvest.

Forest Management

In tables 9a and 9b, interpretive ratings are given for various aspects of forest management. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified aspect of forest



Figure 11.—Walnut production in an area of Horsecreek silt loam, 0 to 2 percent slopes, occasionally flooded.

management. *Not limited* indicates that the soil has features that are very favorable for the specified aspect of management. Good performance and very low maintenance can be expected. *Slightly limited* indicates that the soil has features that are favorable for the specified aspect of management. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. *Moderately limited* indicates that the soil has features that are moderately favorable for the specified aspect of management. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate

maintenance can be expected. *Limited* indicates that the soil has one or more features that are significant limitations for the specified aspect of management. The limitations can be overcome, but overcoming them generally requires special design, special planning, soil reclamation, specialized equipment, or other procedures that may result in additional expense. Fair performance and moderate or high maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified aspect of management. The limitations generally cannot be overcome without major soil reclamation, special design, specialized equipment, or

other expensive procedures. Poor performance, unsafe conditions, or high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The numerical ratings are shown as decimal fractions ranging from 0.00 to 1.00. Limitation classes are assigned as follows:

Not limited	0.00
Slightly limited	0.01 to 0.30
Moderately limited	0.31 to 0.60
Limited	0.61 to 0.99
Very limited	1.00

The numerical ratings used to express the severity of individual limitations indicate gradations between the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation.

Limitation class terms and numerical ratings are shown for each limiting soil feature listed. As many as three soil features may be listed for each component. The overall limitation class for the component is based on the most severe limitation.

The paragraphs that follow indicate the soil properties considered in rating the soils for forest management factors. More detailed information about the criteria used in the ratings is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or through the Agency's Website.

In table 9a, ratings in the column *hand planting* are based on slope, depth to a restrictive layer, content of sand, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. Ratings indicate the expected difficulty of hand planting, which includes the proper placement of root systems of tree seedlings to a depth of up to 12 inches, using standard hand planting tools. It is assumed that necessary site preparation is completed before seedlings are planted.

Ratings in the column *mechanical planting* are based on slope, depth to a restrictive layer, content of sand, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. Ratings indicate the expected difficulty in using a mechanical planter, which includes proper placement of root systems of tree seedlings to a depth of up to 12 inches. It is assumed that necessary site preparation is completed before seedlings are planted.

Ratings in the column *use of harvesting equipment* are based on slope, rock fragments on the surface, plasticity index, content of sand, surface texture, depth to a water table, and ponding. Ratings indicate the

suitability for operating harvesting equipment for off-road transport or harvest of logs and/or wood products by ground-based wheeled or tracked equipment.

Ratings in the column *mechanical site preparation (surface)* are based on slope, depth to a restrictive layer, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The part of the soil from the surface to a depth of about 12 inches is considered in the ratings. Ratings indicate the suitability of using surface-altering soil tillage equipment to prepare the site for planting or seeding.

Ratings in the column *roads (natural surface)* are based on slope, rock fragments on the surface, plasticity index, content of sand, surface texture, depth to a water table, ponding, flooding, and the hazard of soil slippage. The ratings indicate the suitability for using the natural surface of the soil for roads on which trucks transport logs and other wood products from the site.

In table 9b, ratings in the column *erosion on roads and trails* are based on the soil erodibility factor K, slope, and content of rock fragments. The ratings apply to unsurfaced roads and trails.

Ratings in the column *off-road or off-trail erosion* are based on slope and on the soil erodibility factor K. The soil loss is caused by sheet or rill erosion in off-road or off-trail areas where 50 to 75 percent of the surface has been exposed by logging, grazing, mining, or other kinds of disturbance.

Ratings in the column *soil rutting* are based on depth to a water table, rock fragments on or below the surface, surface texture, depth to a restrictive layer, and slope. Ruts form as a result of the operation of forest equipment. Ratings indicate limitations affecting the hazard or risk of ruts in the uppermost layers of the soil. Soil displacement and puddling (soil deformation and compaction) may occur simultaneously with the formation of ruts.

Ratings in the column *log landings* are based on slope, rock fragments on the surface, plasticity index, content of sand, surface texture, depth to a water table, ponding, flooding, and the hazard of soil slippage. Ratings indicate the suitability of the soil at the forest site to serve as a log landing and to allow the efficient and effective use of equipment for the temporary storage and handling of logs.

Ratings in the column *seedling survival* are based on flooding, ponding, depth to a water table, content of lime, reaction, salinity, available water capacity, soil moisture regime, soil temperature regime, aspect, and slope. Ratings indicate the impact of soil, physiographic, and climatic conditions on the survivability of newly established tree seedlings.

Windbreaks and Environmental Plantings

Douglas C. Wallace, forester, Natural Resources Conservation Service, helped prepare this section.

Living plants play an important role in supporting our life and improving its condition. If properly used and maintained, plants can help provide positive solutions to many problems in our contemporary environment. In Cedar County, windbreaks and environmental plantings can be utilized throughout the landscape to meet a variety of engineering, climatic, and esthetic needs.

Windbreaks can be grown successfully in many areas of Cedar County. Several specific aspects of management should be considered when farmstead and field windbreaks are planned. These include design and layout; species selection; site preparation; handling of seedlings; weed management; supplemental watering; and protection from diseases, insects, and livestock.

Farmstead windbreaks make the farmstead area a more comfortable place, reduce energy costs, increase garden and fruit tree yields, enhance wildlife populations, buffer noises, and raise property values (Scholten, 1988). Feedlot windbreaks can be used to protect livestock from wind and snow. Windbreaks significantly reduce calf losses, make feeding operations easier, and enable livestock to maintain better weight with less feed.

Farmstead and feedlot windbreaks are generally three or more rows wide, and at least two of the rows consist of a conifer species. The windbreaks should be established on the windward side of the area to be protected and as perpendicular as possible to the prevailing winds (Brandle and others, 1988). Well designed farmstead and feedlot windbreaks are needed throughout Cedar County, especially in the cleared upland areas of the Bona-Creldon-Hoberg and Sylvania-Barden-Barco soil associations, which are described under the heading "General Soil Map Units."

Field windbreaks or shelterbelts are designed to protect field crops and areas of bare soil from the effects of strong winds. Field windbreaks minimize soil losses, increase crop yields, retard the spread of weeds between fields, and enhance wildlife populations (Brandle and others, 1988). They should be carefully planned. Field boundaries, irrigation systems, power lines, and roads should be considered when the location of field windbreaks is determined. The windbreaks should be planted at right angles to the prevailing wind. Field windbreaks typically consist of a series of single rows of trees or shrubs. They can

be useful throughout the county but are most beneficial in areas of the Bona-Creldon-Hoberg and Sylvania-Barden-Barco associations.

Environmental plantings can be used for beautification, as visual screens, and for control of acoustical, pollution, and climatic problems around buildings and other living spaces. Care should be given to selecting plants that exhibit proper height, shape, form, color, and texture and that are compatible with the surrounding area, structures, and desired use (Robinette, 1972). Establishing trees and shrubs is relatively easy in most areas of Cedar County, but adequate site preparation prior to planting and control of competition from weeds after planting are necessary.

Table 10 shows the height that locally grown trees and shrubs are expected to reach in 20 years on various soils. The estimates in the table are based on measurements and observation of established plantings that have been given adequate care. They can be used as a guide in planning windbreaks and screens. Additional information on planning windbreaks and screens and planting and caring for trees and shrubs can be obtained from the local office of the Natural Resources Conservation Service or of the Cooperative Extension Service or from a commercial nursery.

Recreation

The diversity of landscapes in Cedar County provides many opportunities for outdoor recreation. The county has forest-covered hills, grassland prairies, and continuously flowing streams (fig. 12).

The Stockton Lake project consists of 12,835 acres of Federal land and 13,410 acres of water. The project area provides most of the recreational opportunities in the county, including access for boating and other water sports, camping, hiking, hunting, and nature studies. The Army Corps of Engineers and the Missouri Department of Conservation manage 90 percent of the project land for wildlife enhancement. The Missouri Department of Conservation also manages several tracts in other parts of the county that have a wide range of landscapes and vegetation and thus provide additional opportunities for recreational activities. These tracts include native prairie areas, forested areas, and river access points.

Recreational facilities in the larger urban areas include sports arenas, golf courses, and city parks.

The soils of the survey area are rated in table 11 according to limitations that affect their suitability for recreational uses. Soils are rated for camp areas, picnic areas, playgrounds, and paths and trails.



Figure 12.—The Sac River flowing through an area of the Sturkie-Cleora-Moniteau association provides many recreational opportunities.

The ratings in the table are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In

planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

The ratings in the table are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect recreational site development. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Slightly limited* indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low

maintenance can be expected. *Moderately limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Limited* indicates that the soil has one or more features that are significant limitations for the specified use. The limitations can be overcome, but overcoming them generally requires special design, soil reclamation, or installation procedures that may result in additional expense. Fair performance and moderate or high maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The numerical ratings are shown as decimal fractions ranging from 0.00 to 1.00. Limitation classes are assigned as follows:

Not limited	0.00
Slightly limited	0.01 to 0.30
Moderately limited	0.31 to 0.60
Limited	0.61 to 0.99
Very limited	1.00

The numerical ratings used to express the severity of individual limitations indicate gradations between the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation.

Limitation class terms and numerical ratings are shown for each limiting soil feature listed. As many as three soil features may be listed for each component. The overall limitation rating for the component is based on the most severe limitation.

The information in table 11 can be supplemented by other information in this survey, for example, interpretations for building site development, construction materials, sanitary facilities, and water management.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of

vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The ratings are based on the soil properties that affect the ease of developing picnic areas and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Playgrounds require soils that are nearly level, are free of stones, and can withstand intensive foot traffic. The ratings are based on the soil properties that affect the ease of developing playgrounds and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of playgrounds. For good trafficability, the surface of the playgrounds should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The ratings are based on the soil properties that affect trafficability and erodibility. These properties are stoniness, a water table, ponding, flooding, slope, and texture of the surface layer. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to frequent flooding during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Wildlife Habitat

Bob Schroepfel, wildlife biologist, Missouri Department of Conservation, helped prepare this section.

Cedar County is in the southwestern part of Missouri, where the prairies of the West begin to grade into the woodlands of the Ozarks. Early records indicate that nearly 172 square miles, or about 35 percent of the total land base, consisted of tall grass prairie (Schroeder, 1982). This expanse of native grassland remained relatively undisturbed because the early settlers put more value on woodland than on the prairies. Early accounts described the prairie as a "vast wasteland of bluestem grass, growing as high as the back of a horse" (Abbot and Hoff, 1971).

The areas along the transition zone between the grasslands and woodlands had quite a diversity of habitat types. Cedar County is in such an area. Isolated clumps of trees and shrubs, such as blackjack oak, sumac, and post oak, were interspersed among the native grasses. Prairies in Cedar County had a scant growth of blackjack oak. "Prairie bottoms" was the term used to describe the scattering of native grasslands along the various streams and rivers in the county (Watson, 1911). The wildlife species associated with these habitats were plentiful.

Eventually, the early settlers discovered the value and importance of the native grasslands. The "wild grasses that covered the prairies were found to be so valuable that in many cases they have been preserved after the range has been fenced into pastures" (Watson, 1911). It was also noted that "by judicious care the bluestem, which had been practically killed out by close pasturing, can yield as good crops as formerly" (Watson, 1911). These early settlers killed large numbers of animals. Some animals, such as mountain lions, wolves, and bears, were eliminated out of fear. Other animals were over-hunted for food. Some animals, such as deer and turkey, were "killed and left undressed" to protect the crops (Bicknese, 1989). By the 1840s, most of Missouri's large mammals (such as bison, elk, and pronghorn) were declining in number as a result of increased human activity in this region.

Several factors contributed to the demise of the presettlement prairie. In the mid 1800s, pioneers saw the potential of the prairie grasses for livestock use. These early settlers were used to the cool-season grasses of the eastern United States, however, and had no experience with the native grasses of the

prairies. Their inexperience with warm-season grasses led to fencing, overgrazing, and the control of wildfires, which were not recognized as beneficial for the improvement and maintenance of the prairie grasses.

The control of wildfires allowed woody species to expand from the wooded stream valleys into the prairies. This process of timber invasion was described in the following account from nearby Lawrence County: "As the prairie lands were fenced and prairie fires were checked, the forests began to encroach on the prairies. Growth of hazel and sumac skirted the edges of the prairie, and here and there a lone hickory, a small clump of post oak, or a persimmon advanced onto the prairie, in many places following the courses of small streams. These trees were in time surrounded by others, forming larger clumps which spread until extensive areas became forested" (Sweet and Jordan, 1928).

Up until the 1870s, most of the agricultural products were used locally. The building of a railroad a few miles to the west of Cedar County in 1871 and the extension of a second railroad through Dade County in 1881 opened this frontier area to outside markets (Bicknese, 1989). The range was fenced, large prairies were plowed for crops, and the savannas were cleared to be used as pastures. These changes made Cedar County attractive to homesteaders, but the loss in number and quality of native prairie and savanna communities caused prairie wildlife populations to suffer.

Cedar County is within two natural divisions of Missouri as defined by Thom and Wilson (1980). The western one-third of the county is in the Osage Plains Natural Division. This section was primarily prairie in presettlement times, but savanna, upland and bottom-land deciduous forest, and marsh also occurred. Streams in this division commonly have shallow valleys and broad flood plains with sloughs and marshes. Pin oak and pecan are typical tree species in the bottom-land forests (Thom and Wilson, 1980). Soils in this area are nearly level to gently sloping. The geological formations of the Osage Plains are primarily Pennsylvanian sandstone and Meramecian-series limestone of Mississippian age (Koenig, 1961).

The eastern part of the county is in the Springfield Plateau Section of the Ozark Natural Division. This section is less highly dissected than the other sections of the Ozarks. It is characterized by higher elevations, numerous karst features, Ozark border soils, and Mississippian and Ordovician bedrock. Glades, prairies, savannas, and deciduous forests

characterized this region in presettlement times. The geology of the Springfield Plateau Division is mostly Osagean-series Mississippian limestone (Koenig, 1961).

The Missouri Department of Conservation manages several areas in Cedar County. These include the 420-acre Mo-Ko Prairie and the 270-acre Monegaw Prairie, both of which are east of El Dorado Springs, and the Bluff Springs (415 acres), Turkey Creek (160 acres), and Sky Prairie (200 acres) Conservation Areas. In addition, more than 16,500 acres is managed for wildlife habitat around Stockton Lake.

In 1989, the Missouri Department of Conservation identified high-quality natural communities in Cedar County. As would be expected, prairie is the most abundant of the remaining natural communities in the county, even though many of the presettlement prairies are gone. In the inventory, Cedar County included numerous chert, hardpan, limestone, and sandstone prairies that received a notable or higher ranking. Significant glades and savannas also were noted during the inventory (Bicknese, 1989).

There are published and/or documented accounts of 226 species of fish and wildlife in Cedar County, and another 178 species are likely to occur, according to the Missouri Fish and Wildlife Information System, Missouri Department of Conservation. Typical nongame species include golden shiner, western chorus frog, prairie ringneck snake, turkey vulture, yellow-billed cuckoo, eastern bluebird, meadow jumping mouse, and southern flying squirrel. The most common game species include white-tailed deer, wild turkey, northern bobwhite quail, eastern cottontail rabbit, white crappie, bass, and bluegill.

The abundance of larger Missouri mammals in Cedar County is lower than that in other western prairie counties. Sightings compiled from the Missouri Department of Conservation cooperative archery hunter survey show that Cedar County has a lower occurrence of coyote, red fox, gray fox, bobcat, raccoon, opossum, and deer as compared to the state average. This survey is based on sightings per 1,000 hours of hunter trips (Missouri Department of Conservation, 1990b). In 1988-89, the furbearer harvest for Cedar County was generally lower than in neighboring counties. Species harvested included opossum, striped skunk, muskrat, raccoon, mink, red fox, gray fox, coyote, bobcat, and beaver (Missouri Department of Conservation, 1990a).

Wildlife species associated with prairie habitat are generally unique to prairies and are not commonly found in other habitat types in the state. The plight of the greater prairie chicken has been well documented; populations have continued to decline since the late

1950s. Destruction and degradation of native prairies, either through plowing or mismanagement, are the primary reasons. Today, more than 93 percent of the original prairie in Missouri is gone. Cedar County has a remnant prairie chicken population, including a resident flock on the Mo-Ko Prairie. Also, several other species, including Henslow's sparrow, upland sandpiper, northern crawfish frog, prairie mole cricket, northern harrier, and scissor-tailed flycatcher, are dependent on the habitat provided by the prairies in Cedar County.

Several fish and wildlife species in Cedar County maintain special status in regard to State and Federal lists of rare and/or endangered species. A few of the documented species include Niangua darter, gray bat, black-tailed jackrabbit, and least weasel. Other species identified in the Natural Features Inventory of 1989 included Henslow's sparrow, prairie mole cricket, northern harrier, regal fritillary butterfly, greater prairie chicken, northern crawfish frog, and pink mucket pearly mussel (Bicknese, 1989).

Many plant species in Cedar County are also included on various sensitive/protected lists. Some of the prairie and glade species on these lists include Mead's milkweed (*Asclepias meadii*), royal catchfly (*Silene regia*), and geocarpon (*Geocarpon minimum*) (Bicknese, 1989).

Openland wildlife species, such as bobwhite quail and rabbits, suffer from lack of hard winter cover, poor grassland management, and limited winter food supplies (USDA, 1982). The shortage of available small grain crops limits the winter food supply for many birds and animals. Planting food plots or leaving a few rows of unharvested crops in the fields can improve the supply of food for wildlife. Most areas of cropland in the county are in areas of Barco, Barden, Creldon, Parsons, and Sylvania soils. Nearly 26 percent of the land area in the county is grassland, and fescue is the dominant grass species. This conversion to fescue is mainly the result of plowing or overseeding of native prairies. The growth characteristics of fescue and the common management practices associated with it (such as overgrazing and early haying) limit the small game populations. Increasing the acreage of native warm-season grasses and improving management would benefit the quality and diversity of the county's grasslands and thus would benefit wildlife. In addition, using a planned grazing system can protect critical areas needed for nesting and escape cover.

About 28 percent of the land area in the county is forestland. The major woodlands are typically in areas of Alsup, Bolivar, Cliquot, Goss, and Sonsac soils. The

most common game species in these areas is white-tailed deer. Local and non-county hunting pressure is considered moderate. Cedar County harvested 1,831 deer during the 1998 firearms and archery seasons.

Several factors affect the quality of the woodland wildlife habitat in Cedar County. All species of woodland wildlife suffer greatly from misuse of the timber resource. The most notable management practice that affects woodland wildlife is allowing grazing in areas of woodland. In 1982, 55 percent of the woodlands inventoried in Cedar County had been grazed (USDA, 1982). Grazing of woodlands can result in tree damage, destruction of wildlife habitat, increased soil erosion, and surface compaction. The species that are negatively affected by allowing livestock to graze in areas of woodland include three-toed box turtle, American woodcock, and great horned owl.

Wetland habitat in Cedar County includes farm ponds, rivers and streams, and the lands around Stockton Lake. The variety of water levels provided by the lake helps to create some excellent wetland habitat. Some of the streams and rivers in the county are the Sac River, Cedar Creek, Turnback Creek, Son's Creek, and Horse Creek.

Several species of waterfowl are known residents of the county. These include Canada geese, wood ducks, and mallards. The main soils associated with riparian areas along the county's rivers and creeks are Horsecreek, Moniteau, Racket, and Sturkie soils. Three active heron rookeries have been identified along the major rivers and creeks. The largest of these is along Cedar Creek.

The primary sport-fishing species in the county include largemouth bass, walleye, channel catfish, bluegill, and white crappie.

In tables 12a and 12b, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The ratings in the tables are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. *Not limited* indicates that the soil has features that are very favorable for the specified use. Habitat is easily established, improved, or maintained. *Slightly limited* indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome.

Habitat can be established, improved, or maintained. *Moderately limited* indicates that the soil has features that are moderately favorable for the specified use. Habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. *Limited* indicates that the soil has one or more features that are significant limitations for the specified use. Habitat is difficult to create, improve, or maintain in most places. Management is difficult and must be very intensive. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. Habitat is usually impractical or impossible to create, improve, or maintain. Management would be very difficult, and unsatisfactory results can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The numerical ratings are shown as decimal fractions ranging from 0.00 to 1.00. Limitation classes are assigned as follows:

Not limited	0.00
Slightly limited	0.01 to 0.30
Moderately limited	0.31 to 0.60
Limited	0.61 to 0.99
Very limited	1.00

The numerical ratings used to express the severity of individual limitations indicate gradations between the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation.

Limitation class terms and numerical ratings are shown for each limiting soil feature listed. As many as three soil features may be listed for each component. The overall limitation class for the component is based on the most severe limitation.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Selection should be made from a list of locally adapted species.

Domestic grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture also are considerations. Selection should be made from a list of locally adapted species.

Upland wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Selection should be made from a list of locally adapted species.

Upland shrubs and vines are bushy woody plants that produce fruit, buds, twigs, bark, and foliage. Soil properties and features that affect the growth of shrubs and vines are depth of the root zone, available water capacity, salinity, and soil moisture. Selection should be made from a list of locally adapted species.

Upland deciduous trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees are depth of the root zone, available water capacity, and wetness. Selection should be made from a list of locally adapted species.

Upland mixed deciduous-conifer trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, browse, seeds, and foliage. Soil properties and features that affect the growth of these trees are depth of the root zone, available water capacity, and wetness. Selection should be made from a list of locally adapted species.

Riparian herbaceous plants are annual and perennial native or naturally established grasses and forbs that grow on moist or wet sites. Soil properties and features affecting riparian herbaceous plants are surface texture, wetness, flooding, ponding, and surface stones. Selection should be made from a list of locally adapted species.

Riparian shrubs, vines, and trees are bushy woody plants and trees that grow on moist or wet sites. Soil properties and features affecting these plants are surface texture, wetness, flooding, ponding, and surface stones. Selection should be made from a list of locally adapted species.

Freshwater wetland plants are grasses, forbs, and shrubs that are adapted to wet soil conditions. The soils suitable for this habitat generally occur adjacent to springs, seeps, depressions, areas of bottom land, marshes, or backwater areas on flood plains. Most areas are ponded for some period of time during the year. Soil properties and features affecting these plants are surface texture, wetness, ponding, and soil reaction. Selection should be made from a list of locally adapted species.

Irrigated freshwater wetland plants are grasses, forbs, and shrubs that are adapted to wet soil

conditions. The soils suitable for this habitat generally occur in areas of cropland, in previously cropped areas, and in marginal areas associated with cropland and wetlands. These areas may be ponded for some period of time during the year. They are generally suitable for restoring wetland features temporarily or permanently. Soil properties and features affecting these plants are surface texture, permeability, wetness, ponding, and soil reaction. Selection should be made from a list of locally adapted species.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, water management, and waste management. The ratings are based on observed performance of the soils and on the data in the tables described under the heading "Soil Properties."

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility,

permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; evaluate sites for agricultural waste management; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Soil properties influence the development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance. Table 13 shows the degree and kind of soil limitations that affect dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping.

The ratings in the table are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect building site development. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Slightly limited* indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. *Moderately limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Limited* indicates that

the soil has one or more features that are significant limitations for the specified use. The limitations can be overcome, but overcoming them generally requires special design, soil reclamation, or installation procedures that may result in additional expense. Fair performance and moderate or high maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The numerical ratings are shown as decimal fractions ranging from 0.00 to 1.00. Limitation classes are assigned as follows:

Not limited	0.00
Slightly limited	0.01 to 0.30
Moderately limited	0.31 to 0.60
Limited	0.61 to 0.99
Very limited	1.00

The numerical ratings used to express the severity of individual limitations indicate gradations between the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation.

Limitation class terms and numerical ratings are shown for each limiting soil feature listed. As many as three soil features may be listed for each component. The overall limitation rating for the component is based on the most severe limitation.

Dwellings are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet. The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification. The properties that affect the ease and amount of excavation include a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Small commercial buildings are structures that are

less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification). The properties that affect the ease and amount of excavation include flooding, a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, a water table, ponding, flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, a water table, and ponding.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer.

Sanitary Facilities

The soils of the survey area are rated in table 14 according to limitations that affect their suitability for sanitary facilities. Soils are rated for septic tank

absorption fields, sewage lagoons, sanitary landfills, and daily cover for landfill.

The ratings in the table are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect sanitary facilities. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Slightly limited* indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. *Moderately limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Limited* indicates that the soil has one or more features that are significant limitations for the specified use. The limitations can be overcome, but overcoming them generally requires special design, soil reclamation, or installation procedures that may result in additional expense. Fair performance and moderate or high maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The numerical ratings are shown as decimal fractions ranging from 0.00 to 1.00. Limitation classes are assigned as follows:

Not limited	0.00
Slightly limited	0.01 to 0.30
Moderately limited	0.31 to 0.60
Limited	0.61 to 0.99
Very limited	1.00

The numerical ratings used to express the severity of individual limitations indicate gradations between the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation.

Limitation class terms and numerical ratings are shown for each limiting soil feature listed. As many as three soil features may be listed for each component. The overall limitation rating for the component is based on the most severe limitation.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is

evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health.

Permeability, a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may be contaminated. Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, hillside seepage, and contamination of ground water, can affect public health.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, permeability, a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

Soil permeability is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a permeability rate of more than 2 inches per hour are too porous for the proper functioning of sewage lagoons. In these soils, seepage of the effluent can result in contamination of the ground water. Ground-water contamination is also a hazard if fractured bedrock is within a depth of 40 inches, if the water table is high enough to raise the level of sewage in the lagoon, or if floodwater overtops the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If the lagoon is to be uniformly deep throughout, slope must be gentle enough and the soil material must be thick enough over bedrock or a cemented pan to make land smoothing practical.

A *trench sanitary landfill* is an area where solid

waste is placed in successive layers in an excavated trench. The waste is spread, compacted, and covered daily with a thin layer of soil excavated at the site. When the trench is full, a final cover of soil material at least 2 feet thick is placed over the landfill. The ratings in the table are based on the soil properties that affect the risk of pollution, the ease of excavation, trafficability, and revegetation. These properties include permeability, depth to bedrock or a cemented pan, a water table, ponding, slope, flooding, texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, onsite investigation may be needed.

Hard, nonrippable bedrock, creviced bedrock, or highly permeable strata in or directly below the proposed trench bottom can affect the ease of excavation and the hazard of ground-water pollution. Slope affects construction of the trenches and the movement of surface water around the landfill. It also affects the construction and performance of roads in areas of the landfill.

Soil texture and consistence affect the ease with which the trench is dug and the ease with which the soil can be used as daily or final cover. They determine the workability of the soil when dry and when wet. Soils that are plastic and sticky when wet are difficult to excavate, grade, or compact and are difficult to place as a uniformly thick cover over a layer of refuse.

The soil material used as the final cover for a trench landfill should be suitable for plants. It should not have excess sodium or salts and should not be too acid. The surface layer generally has the best workability, the highest content of organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

In an *area sanitary landfill*, solid waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site. A final cover of soil material at least 2 feet thick is placed over the completed landfill. The ratings in the table are based on the soil properties that affect trafficability and the risk of pollution. These properties include flooding, permeability, a water table, ponding, slope, and depth to bedrock or a cemented pan.

Flooding is a serious problem because it can result in pollution in areas downstream from the landfill. If permeability is too rapid or if fractured bedrock, a fractured cemented pan, or the water table is close to the surface, the leachate can contaminate the water supply. Slope is a consideration because of the extra

grading required to maintain roads in the steeper areas of the landfill. Also, leachate may flow along the surface of the soils in the steeper areas and cause difficult seepage problems.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste. The ratings in the table also apply to the final cover for a landfill. They are based on the soil properties that affect workability, the ease of digging, and the ease of moving and spreading the material over the refuse daily during wet and dry periods. These properties include soil texture, a water table, ponding, rock fragments, slope, depth to bedrock or a cemented pan, reaction, and content of salts, sodium, or lime.

Loamy or silty soils that are free of large stones and excess gravel are the best cover for a landfill. Clayey soils may be sticky and difficult to spread; sandy soils are subject to wind erosion.

Slope affects the ease of excavation and of moving the cover material. Also, it can influence runoff, erosion, and reclamation of the borrow area.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. It should not have excess sodium, salts, or lime and should not be too acid.

Construction Materials and Excavating

The soils of the survey area are rated in table 15 as a source of roadfill, sand, gravel, or topsoil. Normal compaction, minor processing, and other standard construction practices are assumed. The soils are also rated according to limitations that affect their suitability for shallow excavations. The ratings in the table are both verbal and numerical.

For sand and gravel, the soils are rated as a *probable*, *possible*, or *improbable* source. A rating of *probable* indicates that the source material is likely to be in or below the soil. A rating of *possible* indicates that the source material may be in or below the soil and that further investigation is warranted. A rating of *improbable* indicates that the source material is unlikely to be in or below the soil. The numerical ratings in these columns indicate the degree of probability. A numerical rating of 1.00 indicates that the soil is an improbable source. A numerical rating of less than 1.00 indicates the degree to which the soil is a possible or probable source of sand or gravel.

Other rating class terms used in this table indicate the extent to which the soils are limited by soil features that affect their use as a source for roadfill or topsoil or their suitability for shallow excavations. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Slightly limited* indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. *Moderately limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Limited* indicates that the soil has one or more features that are significant limitations for the specified use. The limitations can be overcome, but overcoming them generally requires special design, soil reclamation, or installation procedures that may result in additional expense. Fair performance and moderate or high maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings for roadfill, topsoil, and shallow excavations indicate the severity of individual limitations. The numerical ratings are shown as decimal fractions ranging from 0.00 to 1.00. Limitation classes are assigned as follows:

Not limited	0.00
Slightly limited	0.01 to 0.30
Moderately limited	0.31 to 0.60
Limited	0.61 to 0.99
Very limited	1.00

The numerical ratings used to express the severity of individual limitations indicate gradations between the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation.

Limitation class terms and numerical ratings are shown for each limiting soil feature listed. As many as three soil features may be listed for each component. The overall limitation rating for the component is based on the most severe limitation.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6

feet high and less exacting in design than higher embankments.

The ratings are for the whole soil, from the surface to a depth of about 5 feet. It is assumed that soil layers will be mixed when the soil material is excavated and spread.

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation is affected by large stones, a water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the AASHTO classification of the soil) and linear extensibility (shrink-swell potential).

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In the table, only the likelihood of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material. The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the lowest layer of the soil contains sand or gravel, the soil is rated as a probable source regardless of the thickness. The assumption is that the sand or gravel layer below the depth of observation exceeds the minimum thickness.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the

absorption and retention of moisture and nutrients for plant growth.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

Water Management

Table 16 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas, drainage, irrigation, terraces and diversions, and grassed waterways.

The ratings in the table are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Slightly limited* indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. *Moderately limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Limited* indicates that the soil has one or more features that are significant limitations for the specified use. The limitations can be overcome, but overcoming them generally requires special design, soil reclamation, or installation procedures that may result in additional expense. Fair performance and moderate or high maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor

performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The numerical ratings are shown as decimal fractions ranging from 0.00 to 1.00. Limitation classes are assigned as follows:

Not limited	0.00
Slightly limited	0.01 to 0.30
Moderately limited	0.31 to 0.60
Limited	0.61 to 0.99
Very limited	1.00

The numerical ratings used to express the severity of individual limitations indicate gradations between the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation.

Limitation class terms and numerical ratings are shown for each limiting soil feature listed. As many as three soil features may be listed for each component. The overall limitation rating for the component is based on the most severe limitation.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Slope can affect the storage capacity of the reservoir area.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, permeability, depth to a water table, ponding, slope, and flooding. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or a cemented pan, large stones, slope, and the likelihood that cutbanks will cave. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, and sulfur. The availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to a water table, ponding, flooding, available water capacity, intake rate, permeability, erodibility, and slope. The construction of a system is affected by large stones and depth to bedrock. The performance of a system is affected by the depth of the root zone, reaction, and the amount of salts, sodium, sulfur, lime, or gypsum.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve

moisture by intercepting runoff. Slope, a water table, ponding, large stones, and depth to bedrock affect the construction of terraces and diversions. A restricted rooting depth, erodibility, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, a water table, slope, and depth to bedrock affect the construction of grassed waterways. Erodibility, soil moisture regime, available water capacity, restricted rooting depth, restricted permeability, and toxic substances, such as salts and sodium, affect the growth and maintenance of the grass after construction.

Waste Management

Soil properties are important considerations in areas where soils are used as sites for the treatment and disposal of organic waste and wastewater. Selection of soils with properties that favor waste management can help to prevent environmental damage.

Table 17 shows the degree and kind of soil limitations affecting the treatment of agricultural waste, including municipal and food-processing wastewater and effluent from lagoons or storage ponds. Municipal wastewater is the waste stream from a municipality. It contains domestic waste and may contain industrial waste. It may have received primary or secondary treatment. It is rarely untreated sewage. Food-processing wastewater results from the preparation of fruits, vegetables, milk, cheese, and meats for public consumption. In places it is high in content of sodium and chloride. In the context of this table, the effluent in lagoons and storage ponds is from facilities used to treat or store food-processing wastewater or domestic or animal waste. Domestic and food-processing wastewater is very dilute, and the effluent from the facilities that treat or store it commonly is very low in content of carbonaceous and nitrogenous material; the content of nitrogen commonly ranges from 10 to 30 mg/l. The wastewater from animal waste treatment lagoons or storage ponds, however, has much higher concentrations of these materials, mainly because the manure has not been diluted as much as the domestic waste. The content of nitrogen in this wastewater generally ranges from 50 to 2,000 mg/l. When wastewater is applied, checks should be made to ensure that nitrogen, heavy metals, and salts are not added in excessive amounts.

The ratings in the table are for waste management

systems that not only dispose of and treat organic waste or wastewater but also are beneficial to crops (application of manure and food-processing waste, application of sewage sludge, and disposal of wastewater through irrigation) and for waste management systems that are designed only for the purpose of wastewater disposal and treatment (slow rate treatment of wastewater and rapid infiltration of wastewater).

The ratings in the table are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Slightly limited* indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. *Moderately limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Limited* indicates that the soil has one or more features that are significant limitations for the specified use. The limitations can be overcome, but overcoming them generally requires special design, soil reclamation, or installation procedures that may result in additional expense. Fair performance and moderate or high maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The numerical ratings are shown as decimal fractions ranging from 0.00 to 1.00. Limitation classes are assigned as follows:

Not limited	0.00
Slightly limited	0.01 to 0.30
Moderately limited	0.31 to 0.60
Limited	0.61 to 0.99
Very limited	1.00

The numerical ratings used to express the severity of individual limitations indicate gradations between the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation.

Limitation class terms and numerical ratings are shown for each limiting soil feature listed. As many as

three soil features may be listed for each component. The overall limitation rating for the component is based on the most severe limitation.

Land application of manure and food-processing waste not only disposes of waste material but also improves crop production by increasing the supply of nutrients in the soils where the material is applied. Manure is the excrement of livestock and poultry, and food-processing waste is damaged fruit and vegetables and the peelings, stems, leaves, pits, and soil particles removed in food preparation. The manure and food-processing waste are either solid, slurry, or liquid. Their nitrogen content varies. A high content of nitrogen limits the application rate. Toxic or otherwise dangerous wastes, such as those mixed with the lye used in food processing, are not considered in the ratings.

The ratings are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the waste is applied, and the method by which the waste is applied. The properties that affect absorption include permeability, a water table, ponding, the sodium adsorption ratio, depth to bedrock or a cemented pan, and available water capacity. The properties that affect plant growth and microbial activity include reaction, the sodium adsorption ratio, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood of wind erosion or water erosion. Stones, cobbles, a water table, ponding, and flooding can hinder the application of waste.

Land application of municipal sewage sludge not only disposes of waste material but also improves crop production by increasing the supply of nutrients in the soils where the material is applied. In the context of this table, sewage sludge is the residual product of the treatment of municipal sewage. The solid component consists mainly of cell mass, primarily bacteria cells that developed during secondary treatment and have incorporated soluble organics into their own bodies. The sludge has small amounts of sand, silt, and other solid debris. The content of nitrogen varies. Some sludge has constituents that are toxic to plants or hazardous to the food chain, such as heavy metals and exotic organic compounds, and should be analyzed chemically prior to use.

The content of water in the sludge ranges from about 98 percent to less than 40 percent. The sludge is considered liquid if it is more than about 90 percent water, slurry if it is about 50 to 90 percent water, and solid if it is less than about 50 percent water.

The ratings in the table are based on the soil properties that affect absorption, plant growth,

microbial activity, erodibility, the rate at which the sludge is applied, and the method by which the sludge is applied. The properties that affect absorption, plant growth, and microbial activity include permeability, a water table, ponding, the sodium adsorption ratio, depth to bedrock or a cemented pan, available water capacity, reaction, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood of wind erosion or water erosion. Stones, cobbles, a water table, ponding, and flooding can hinder the application of sludge.

Disposal of wastewater by irrigation not only disposes of municipal wastewater and wastewater from food-processing plants, lagoons, and storage ponds but also improves crop production by increasing the amount of water available to crops. The ratings in the table are based on the soil properties that affect the design, construction, management, and performance of the irrigation system. The properties that affect design and management include the sodium adsorption ratio, a water table, ponding, available water capacity, permeability, slope, and flooding. The properties that affect construction include stones, cobbles, depth to bedrock or a cemented pan, a water table, and ponding. The properties that affect performance include depth to bedrock or a cemented pan, bulk density, the sodium adsorption ratio, salinity, reaction, and the cation-exchange capacity, which is used to estimate the capacity of a soil to adsorb heavy metals.

Treatment of wastewater by slow rate process is a process in which wastewater is applied to land at a rate normally between 0.5 inch and 4.0 inches per week. The application rate commonly exceeds the rate needed for irrigation of cropland. The applied wastewater is treated as it moves through the soil. Much of the treated water percolates to the ground water, and some enters the atmosphere through evapotranspiration. The applied water generally is not

allowed to run off the surface. Waterlogging is prevented either through control of the application rate or through the use of tile drains, or both.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, and the application of waste. The properties that affect absorption include the sodium adsorption ratio, a water table, ponding, available water capacity, permeability, depth to bedrock or a cemented pan, reaction, the cation-exchange capacity, and slope. Reaction, the sodium adsorption ratio, salinity, and bulk density affect plant growth and microbial activity. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood of wind erosion or water erosion. Stones, cobbles, a water table, ponding, and flooding can hinder the application of waste.

Treatment of wastewater by rapid infiltration process is a process in which wastewater applied in a level basin at a rate of 4 to 120 inches per week percolates through the soil, eventually reaching the ground water. The application rate commonly exceeds the rate needed for irrigation of cropland. Vegetation is not a necessary part of the treatment; hence, the basins may or may not be vegetated. The thickness of the soil material needed for proper treatment of the wastewater is more than 72 inches. As a result, geologic and hydrologic investigation is needed to ensure proper design and performance and to determine the risk of ground-water pollution.

The ratings in the table are based on the soil properties that affect the risk of pollution and the design, construction, and performance of the system. A water table, ponding, flooding, and depth to bedrock or a cemented pan affect the risk of pollution and the design and construction of the system. Slope, stones, and cobbles also affect design and construction. Permeability and reaction affect performance.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey.

Soil properties are ascertained by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine particle-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classification, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

Engineering Index Properties

Table 18 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under the heading "Soil Series and Their Morphology."

Texture is given in abbreviations of the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter (fig. 13). "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as

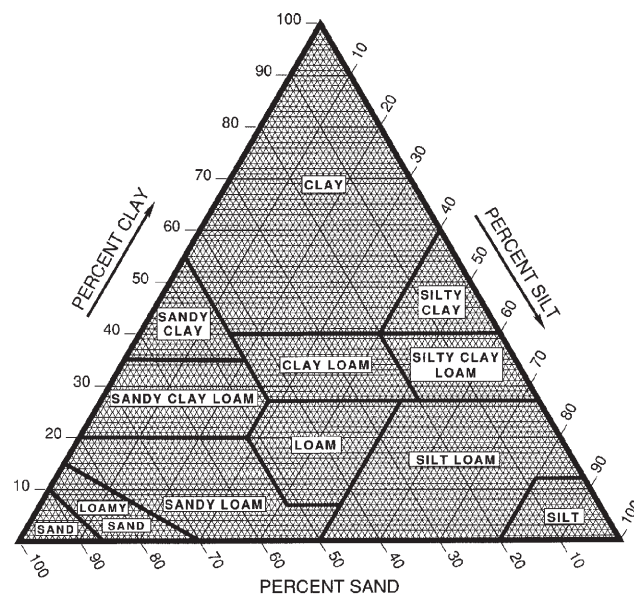


Figure 13.—Percentages of clay, silt, and sand in the basic USDA soil textural classes.

about 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2001) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2000).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and

maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and plasticity index (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical Properties

Table 19 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or

micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In the table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In the table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In the table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (oven-dry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $1/3$ - or $1/10$ -bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Saturated hydraulic conductivity refers to the ability of a soil to transmit water or air. The term "permeability," as used in soil surveys, indicates saturated hydraulic conductivity (K_{sat}). The estimates

in the table indicate the rate of water movement, in micrometers per second (um/sec), when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at $1/3$ - or $1/10$ -bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. Volume change is influenced by the amount and type of clay minerals in the soil.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In the table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (K_w and K_f) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the

Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and permeability. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor K_w indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor K_f indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are as follows:

1. Coarse sands, sands, fine sands, and very fine sands.
2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, ash material, and sapric soil material.
3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams.
- 4L. Calcareous loams, silt loams, clay loams, and silty clay loams.
4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay.
5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material.
6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay.
7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material.
8. Soils that are not subject to wind erosion because of coarse fragments on the surface or because of surface wetness.

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the

size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Chemical Properties

Table 20 shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Cation-exchange capacity is the total amount of extractable bases that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

Effective cation-exchange capacity refers to the sum of extractable bases plus aluminum expressed in terms of milliequivalents per 100 grams of soil. It is determined for soils that have pH of less than 5.5.

Soil reaction is a measure of acidity or alkalinity. The pH of each soil horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Water Features

Table 21 gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Duration and frequency are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year). Probable dates are expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The estimates are based mainly on observations of the water table at selected sites and on the evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. Indicated in the table are depth to the seasonal high water table, the kind of water table, and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in the table.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Two numbers in the column showing depth to the water table indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. "More than 6.0" indicates that the water table is below a depth of 6 feet or that it is within a depth of 6 feet for less than a month.

Soil Features

Table 22 gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A *restrictive layer* is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the

thickness and hardness of the restrictive layer, both of which significantly affect the ease of excavation. *Depth to top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage mainly to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 1998 and 1999). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 23 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Twelve soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Alfisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udalf (*Ud*, meaning humid, plus *alf*, from Alfisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludalfs (*Hapl*, meaning minimal horizonation, plus *udalf*, the suborder of the Alfisols that has a udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Hapludalfs.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineralogy class, cation-exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is clayey-skeletal, mixed, active, mesic Typic Hapludalfs.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" (Soil Survey Division Staff, 1993). Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" (Soil Survey Staff, 1999) and in "Keys to Soil Taxonomy" (Soil Survey Staff, 1998). Unless otherwise indicated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

Alsup Series

Depth to bedrock: Deep (40 to 60 inches)

Drainage class: Moderately well drained

Permeability: Moderately slow

Landform: Hills on uplands

Position on the landform: Backslopes and summits

Parent material: Colluvium over clayey residuum derived from shale and siltstone

Slope class: Gently sloping to steep (3 to 35 percent)

Elevation: 930 feet

Taxonomic classification: Fine, mixed, active, mesic
Oxyaquic Hapludalfs

Typical Pedon

Alsup silt loam, 8 to 15 percent slopes, very stony (fig. 14); 900 feet north and 900 feet west of the southeast corner of sec. 3, T. 32 N., R. 26 W.; in a forest; USGS Crisp topographic quadrangle; UTM coordinates 4,155,340 meters Northing and 432,290 meters Easting:

A—0 to 2 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; strong fine granular structure; very friable; many fine and medium roots; 5 percent siltstone gravel; strongly acid; abrupt smooth boundary.

AE—2 to 5 inches; very dark grayish brown (10YR 3/2) silt loam; weak thin platy structure; friable; many fine and medium roots; common fine light brownish gray (10YR 6/2) silt coats; 5 percent siltstone gravel; very strongly acid; clear smooth boundary.

E—5 to 14 inches; dark grayish brown (10YR 4/2) gravelly silt loam; moderate fine subangular blocky structure; friable; common fine and medium roots; 20 percent siltstone gravel; strongly acid; clear smooth boundary.

BE—14 to 24 inches; pale brown (10YR 6/3) very gravelly silt loam; strong fine and medium subangular blocky structure; firm; few fine roots; common fine masses of iron-manganese accumulation; 55 percent siltstone gravel; strongly acid; clear smooth boundary.

2Bt1—24 to 34 inches; reddish brown (5YR 4/4) silty clay; weak fine angular blocky structure; firm; few fine roots; few faint clay films on faces of peds; many fine light reddish brown (2.5YR 6/4) masses of iron accumulation; 10 percent siltstone gravel; strongly acid; abrupt smooth boundary.

2Bt2—34 to 50 inches; light olive brown (2.5Y 5/6) silty clay; moderate fine angular blocky structure; very firm; common prominent clay films on faces of peds; common fine masses of iron-manganese accumulation and common fine pale olive (5Y 6/4) iron depletions; 10 percent siltstone parachanners; strongly acid; gradual smooth boundary.

2Cr—50 to 60 inches; shale.

Range in Characteristics

Thickness of the ochric epipedon: 5 to 24 inches



Figure 14.—Profile of Alsip silt loam, 8 to 15 percent slopes, very stony. Depth is marked in centimeters.

Depth to the argillic horizon: 5 to 24 inches

Depth to paralithic contact: 41 to 56 inches

A horizon:

Color—hue of 10YR, value of 3 or 4, and chroma of 2

Redoximorphic features—none

Texture of the fine-earth fraction—silt loam

Content of rock fragments—0 to 35 percent

Reaction—strongly acid to neutral (pH 5.1 to 7.3)

E horizon:

Color—hue of 10YR, value of 4 to 7, and chroma of 2 or 3

Redoximorphic features—none

Texture of the fine-earth fraction—silt loam or loam

Content of rock fragments—0 to 50 percent

Reaction—very strongly acid to neutral (pH 4.5 to 7.3)

BE horizon:

Color—hue of 10YR, value of 6, and chroma of 3
Redoximorphic features—none
Texture of the fine-earth fraction—silt loam or silty clay loam
Content of rock fragments—0 to 55 percent
Reaction—strongly acid to moderately acid (pH 5.1 to 6.0)

2Bt horizon:

Color—hue of 5YR, 7.5YR, 10YR, or 2.5Y, value of 4 to 6, and chroma of 2 to 6
Redoximorphic features—iron depletions or masses of iron accumulation
Texture of the fine-earth fraction—clay, silty clay, or silty clay loam
Content of rock fragments—0 to 20 percent
Reaction—very strongly acid to neutral (pH 4.5 to 7.3)

2BC horizon (if it occurs):

Color—hue of 2.5Y, value of 7, and chroma of 6
Redoximorphic features—iron depletions or masses of iron accumulation
Texture of the fine-earth fraction—silty clay loam
Content of rock fragments—80 percent
Reaction—neutral (pH 6.6 to 7.3)

Arnica Series

Depth to bedrock: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Permeability: Moderate

Landform: Paleoterraces in river valleys

Position on the landform: Footslopes

Parent material: Loamy colluvium

Slope class: Gently sloping (2 to 5 percent)

Elevation: 760 feet

Taxonomic classification: Fine-loamy, mixed, active, thermic Oxyaquic Hapludalfs

Typical Pedon

Arnica loam, 2 to 5 percent slopes; 650 feet west and 40 feet south of the northeast corner of sec. 35, T. 36 N., R. 27 W.; in a pasture; USGS Caplinger Mills topographic quadrangle; UTM coordinates 4,189,420 meters Northing and 423,610 meters Easting:

Ap—0 to 6 inches; brown (10YR 4/3) loam, pale brown (10YR 6/3) dry; weak fine granular structure; friable; many fine roots; many very fine vesicular and tubular pores and common fine vesicular and

tubular pores; strongly acid; clear smooth boundary.

Bt1—6 to 14 inches; strong brown (7.5YR 5/6) clay loam; weak very fine subangular blocky structure; friable; common fine roots; many very fine vesicular and tubular pores and common fine vesicular and tubular pores; very few continuous yellowish brown (10YR 5/4) silt coats and very few faint clay films; strongly acid; clear smooth boundary.

Bt2—14 to 23 inches; yellowish brown (10YR 5/4) loam; weak fine subangular blocky structure; firm; common fine roots; common very fine vesicular and tubular pores; few distinct clay films and few distinct brown (10YR 5/3) silt coats; common fine and medium red (2.5YR 4/6) masses of iron accumulation; very strongly acid; clear smooth boundary.

Bt3—23 to 35 inches; yellowish brown (10YR 5/6) clay loam; weak very fine subangular blocky structure; firm; few fine roots; common very fine vesicular and tubular pores; few distinct clay films and very few prominent grayish brown (10YR 5/2) silt coats; common fine yellowish red (5YR 5/6) masses of iron accumulation and common fine masses of iron-manganese accumulation; strongly acid; gradual smooth boundary.

Bt4—35 to 54 inches; yellowish brown (10YR 5/6) clay loam; weak medium subangular blocky structure; firm; few fine roots; few fine vesicular and tubular pores; few distinct clay films and very few distinct brown (10YR 5/3) silt coats; common medium strong brown (7.5YR 5/6) masses of iron accumulation, common fine grayish brown (10YR 5/2) iron depletions, and common medium masses of iron-manganese accumulation; strongly acid; gradual smooth boundary.

Bt5—54 to 80 inches; yellowish brown (10YR 5/6) clay loam; weak very fine subangular blocky structure; firm; few fine roots; few very fine vesicular and tubular pores; few faint clay films; common fine strong brown (7.5YR 5/6) masses of iron accumulation, common fine grayish brown (10YR 5/2) iron depletions, and common fine masses of iron-manganese accumulation; moderately acid.

Range in Characteristics

Thickness of the ochric epipedon: 6 to 14 inches

Depth to the argillic horizon: 6 to 14 inches

Ap or A horizon:

Color—hue of 10YR and value and chroma of 3 or 4

Redoximorphic features—none

Texture of the fine-earth fraction—loam
 Content of rock fragments—0 to 5 percent
 Reaction—strongly acid to neutral (pH 5.1 to 7.3)

BA horizon (if it occurs):

Color—hue of 5YR, 7.5YR, or 10YR, value of 3 to 5, and chroma of 3 to 6
 Redoximorphic features—none
 Texture of the fine-earth fraction—silt loam
 Content of rock fragments—0 to 10 percent
 Reaction—moderately acid (pH 5.6 to 6.0)

Bt horizon:

Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6
 Redoximorphic features—masses of iron accumulation; clay depletions
 Texture of the fine-earth fraction—silt loam, loam, sandy clay loam, or clay loam
 Content of rock fragments—0 to 10 percent
 Reaction—very strongly acid to neutral (pH 4.5 to 7.3)

2Bt horizon (if it occurs):

Color—hue of 5YR, 7.5YR, or 10YR, value of 4 to 6, and chroma of 6
 Redoximorphic features—masses of iron accumulation
 Texture of the fine-earth fraction—clay loam, silty clay loam, silty clay, or clay
 Content of rock fragments—0 to 40 percent
 Reaction—strongly acid to neutral (pH 5.1 to 7.3)

Barco Series

Depth to bedrock: Moderately deep (20 to 40 inches)

Drainage class: Well drained

Permeability: Moderate

Landform: Ridges on uplands

Position on the landform: Summits

Parent material: Residuum derived from sandstone

Slope class: Gently sloping (2 to 5 percent)

Elevation: 1,030 feet

Taxonomic classification: Fine-loamy, mixed, active, thermic Humic Hapludults

Typical Pedon

Barco loam, in an area of Barco-Sylvania complex, 2 to 5 percent slopes; 700 feet north and 1,800 feet west of the southeast corner of sec. 8, T. 32 N., R. 28 W.; in a pasture; USGS Jerico Springs topographic quadrangle; UTM coordinates 4,153,330 meters Northing and 409,130 meters Easting:

A—0 to 7 inches; very dark grayish brown (10YR 3/2) loam, brown (10YR 5/3) dry; moderate fine

granular structure; very friable; many fine and medium roots; strongly acid; clear smooth boundary.

AB—7 to 14 inches; very dark grayish brown (10YR 3/2) loam, brown (10YR 5/3) dry; weak fine subangular blocky structure; friable; many fine and medium roots; very strongly acid; clear smooth boundary.

Bt1—14 to 23 inches; dark yellowish brown (10YR 4/4) loam; weak fine subangular blocky structure; firm; common fine and medium roots; few distinct clay films on faces of peds; 5 percent sandstone gravel; very strongly acid; gradual wavy boundary.

Bt2—23 to 31 inches; yellowish brown (10YR 5/4) cobbly clay loam; moderate fine angular blocky structure; firm; few fine and medium roots; few distinct clay films on faces of peds; common fine and medium dark red (2.5YR 3/6) masses of iron accumulation; 10 percent sandstone gravel and 20 percent sandstone cobbles; very strongly acid; gradual wavy boundary.

Cr—31 to 39 inches; sandstone.

R—39 to 80 inches; sandstone.

Range in Characteristics

Thickness of the umbric epipedon: 8 to 18 inches

Depth to the argillic horizon: 8 to 18 inches

Depth to paralithic contact: 30 to 40 inches

Depth to lithic contact: 34 to 50 inches

Note: These soils do not meet the minimum wetness criteria for the Oxyaquic subgroup.

Ap horizon (if it occurs):

Color—hue of 10YR and value and chroma of 2 or 3

Redoximorphic features—none

Texture of the fine-earth fraction—fine sandy loam or loam

Content of rock fragments—0 to 12 percent

Reaction—strongly acid to neutral (pH 5.1 to 7.3)

A horizon:

Color—hue of 10YR, value of 3, chroma of 2 or 3

Redoximorphic features—none

Texture of the fine-earth fraction—loam

Content of rock fragments—0 to 10 percent

Reaction—strongly acid to neutral (pH 5.1 to 7.3)

AB horizon:

Color—hue of 10YR, value of 3, chroma of 2 to 4

Redoximorphic features—none

Texture of the fine-earth fraction—loam

Content of rock fragments—0 to 5 percent

Reaction—very strongly acid or strongly acid (pH 4.5 to 5.5)

BA horizon (if it occurs):

Color—hue of 10YR and value and chroma of 3 or 4
 Redoximorphic features—none
 Texture of the fine-earth fraction—fine sandy loam or loam
 Content of rock fragments—0 to 5 percent
 Reaction—very strongly acid or strongly acid (pH 4.5 to 5.5)

Bt horizon:

Color—hue of 2.5YR, 5YR, 7.5YR, or 10YR, value of 3 to 5, and chroma of 3 to 8
 Redoximorphic features—masses of iron accumulation
 Texture of the fine-earth fraction—loam, sandy clay loam, or clay loam
 Content of rock fragments—0 to 30 percent
 Reaction—very strongly acid or strongly acid (pH 4.5 to 5.5)

BC horizon (if it occurs):

Color—hue of 10YR, value of 4, and chroma of 6
 Redoximorphic features—iron depletions or masses of iron accumulation
 Texture of the fine-earth fraction—sandy clay loam
 Content of rock fragments—0 to 50 percent
 Reaction—strongly acid (pH 5.1 to 5.5)

Barden Series

Depth to bedrock: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Permeability: Slow

Landform: Divides or hills on uplands

Position on the landform: Summits and footslopes

Parent material: Loess over residuum derived from clayey shale

Slope class: Very gently sloping and gently sloping (1 to 5 percent)

Elevation: 1,030 feet

Taxonomic classification: Fine, mixed, active, thermic Aquollic Hapludalfs

Typical Pedon

Barden silt loam, 1 to 3 percent slopes; 300 feet east and 60 feet north of the southwest corner of sec. 34, T. 32 N., R. 28 W.; in an area of cropland; USGS Golden City topographic quadrangle; UTM coordinates 4,146,610 meters Northing and 411,180 meters Easting:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak medium platy structure parting to weak fine

granular; very friable; few fine roots; neutral; abrupt smooth boundary.

Bt1—8 to 14 inches; yellowish brown (10YR 5/4) silty clay loam; weak fine granular structure; very friable; few fine roots; common distinct clay films on faces of peds; common fine strong brown (7.5YR 4/6) masses of iron accumulation; very strongly acid; clear smooth boundary.

Bt2—14 to 23 inches; yellowish brown (10YR 5/4) silty clay; moderate fine subangular blocky structure; firm; few fine roots; common distinct clay films on faces of peds; common fine yellowish red (5YR 4/6) masses of iron accumulation, few fine iron-manganese concretions, and common fine light brownish gray (10YR 6/2) iron depletions; very strongly acid; clear smooth boundary.

Bt3—23 to 36 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; firm; few fine roots; few faint clay films on faces of peds; few fine strong brown (7.5YR 5/8) masses of iron accumulation, many fine masses of iron-manganese accumulation, and common fine light brownish gray (10YR 6/2) iron depletions; 3 percent chert gravel; strongly acid; clear smooth boundary.

Bt4—36 to 44 inches; yellowish brown (10YR 5/6) silty clay loam; moderate fine angular blocky structure; firm; common distinct clay films on faces of peds; few fine dark red (2.5YR 3/6) masses of iron accumulation, many fine and medium masses of iron-manganese accumulation, and common fine gray (10YR 6/1) iron depletions; 5 percent chert gravel; strongly acid; clear smooth boundary.

Bt5—44 to 54 inches; light yellowish brown (10YR 6/4) silty clay loam; moderate fine and medium angular blocky structure; firm; common distinct clay films on faces of peds; many fine and medium masses of iron-manganese accumulation and common fine gray (10YR 6/1) iron depletions; moderately acid; clear smooth boundary.

BC—54 to 68 inches; yellowish brown (10YR 5/8) and light yellowish brown (10YR 6/4) silty clay loam; moderate fine subangular blocky structure; firm; common distinct pressure faces on faces of peds; many fine and medium masses of iron-manganese accumulation and common fine and medium light brownish gray (10YR 6/2) iron depletions; moderately acid; abrupt smooth boundary.

Cr—68 to 74 inches; shale.

Range in Characteristics

Thickness of the ochric epipedon: 7 to 16 inches

Depth to the argillic horizon: 7 to 16 inches

Depth to paralithic contact: 68 to 80 inches

Ap horizon:

Color—hue of 10YR, value of 3, and chroma of 2
 Redoximorphic features—none
 Texture of the fine-earth fraction—silt loam or loam
 Content of rock fragments—none
 Reaction—strongly acid to neutral (pH 5.1 to 7.3)

BA horizon (if it occurs):

Color—hue of 10YR, value of 5, and chroma of 4
 Redoximorphic features—masses of iron accumulation
 Texture of the fine-earth fraction—loam
 Content of rock fragments—none
 Reaction—neutral (pH 6.6 to 7.3)

Bt horizon:

Color—hue of 10YR, value of 4 to 6, and chroma of 3 to 6
 Redoximorphic features—iron depletions or masses of iron accumulation
 Texture of the fine-earth fraction—clay loam, silty clay loam, clay, or silty clay
 Content of rock fragments—0 to 5 percent
 Reaction—very strongly acid to neutral (pH 4.5 to 7.3)

BC horizon:

Color—hue of 10YR, value of 5 or 6, and chroma of 4 to 8
 Redoximorphic features—iron depletions
 Texture of the fine-earth fraction—silty clay loam or clay loam
 Content of rock fragments—none
 Reaction—very strongly acid to neutral (pH 4.5 to 7.3)

Bolivar Series

Depth to bedrock: Moderately deep (20 to 40 inches)

Drainage class: Well drained

Permeability: Moderate

Landform: Ridges on uplands

Position on the landform: Summits

Parent material: Residuum derived from sandstone

Slope class: Moderately sloping (3 to 8 percent)

Elevation: 1,000 feet

Taxonomic classification: Fine-loamy, mixed, active, thermic Ultic Hapludalfs

Typical Pedon

Bolivar fine sandy loam, in an area of Cliquot-Bolivar complex, 3 to 8 percent slopes; 300 feet east and 600 feet north of the southwest corner of sec. 24, T. 31 N.,

R. 26 W.; in a pasture; USGS Dadeville topographic quadrangle; UTM coordinates 4,139,610 meters Northing and 433,750 meters Easting:

Ap—0 to 7 inches; brown (10YR 4/3) fine sandy loam; weak fine granular structure; friable; many fine roots; 5 percent sandstone gravel; strongly acid; clear smooth boundary.

E—7 to 10 inches; brown (10YR 5/3) fine sandy loam; moderate thin platy structure; friable; few fine roots; common fine and medium brownish yellow (10YR 6/8) masses of iron accumulation; 5 percent sandstone gravel; strongly acid; clear smooth boundary.

BE—10 to 13 inches; yellowish brown (10YR 5/4) fine sandy loam; weak fine subangular blocky structure; friable; common fine and medium roots; 5 percent sandstone gravel; strongly acid; clear smooth boundary.

Bt1—13 to 18 inches; strong brown (7.5YR 5/8) and yellowish brown (10YR 5/4) gravelly sandy clay loam; moderate very fine and fine subangular blocky structure; firm; few fine roots; few faint clay films on faces of peds; 20 percent sandstone gravel; strongly acid; clear wavy boundary.

Bt2—18 to 26 inches; yellowish brown (10YR 5/6) and red (2.5YR 4/8) very flaggy sandy clay loam; moderate fine subangular blocky structure; firm; few fine roots matted around stones; few faint clay films on faces of peds; 45 percent sandstone flagstones; strongly acid; clear wavy boundary.

Cr—26 to 38 inches; sandstone.

R—38 to 80 inches; sandstone.

Range in Characteristics

Thickness of the ochric epipedon: 6 to 13 inches

Depth to the argillic horizon: 6 to 13 inches

Depth to paralithic contact: 26 to 38 inches

Depth to lithic contact: 38 to 44 inches

A or Ap horizon:

Color—hue of 10YR, value of 3 or 4, and chroma of 2 or 3

Redoximorphic features—none

Texture of the fine-earth fraction—fine sandy loam

Content of rock fragments—0 to 5 percent

Reaction—strongly acid to slightly acid (pH 5.1 to 6.5)

E horizon:

Color—hue of 10YR, value of 5, and chroma of 3

Redoximorphic features—masses of iron accumulation

Texture of the fine-earth fraction—fine sandy loam or loam

Content of rock fragments—0 to 5 percent

Reaction—strongly acid to slightly acid (pH 5.1 to 6.5)

BE horizon:

Color—hue of 10YR, value of 5, and chroma of 4
Redoximorphic features—none
Texture of the fine-earth fraction—fine sandy loam
Content of rock fragments—0 to 5 percent
Reaction—strongly acid to slightly acid (pH 5.1 to 6.5)

Bt horizon:

Color—hue of 2.5YR, 5YR, 7.5YR, or 10YR, value of 4 or 5, and chroma of 4 to 8
Redoximorphic features—none
Texture of the fine-earth fraction—sandy clay loam, clay loam, or loam
Content of rock fragments—20 to 45 percent
Reaction—very strongly acid to moderately acid (pH 4.5 to 6.0)

Bona Series

Depth to bedrock: Very deep (more than 60 inches)

Drainage class: Well drained

Permeability: Moderately slow

Landform: Ridges or hills on uplands

Position on the landform: Backslopes or shoulders

Parent material: Gravelly colluvium over clayey residuum derived from cherty limestone

Slope class: Moderately sloping or strongly sloping (3 to 15 percent)

Elevation: 1,090 feet

Taxonomic classification: Clayey-skeletal, mixed, semiactive, mesic Typic Paleudolls

Typical Pedon

Bona gravelly silt loam, 3 to 8 percent slopes; 1,425 feet west and 800 feet south of the northeast corner of sec. 21, T. 33 N., R. 23 W.; in a pasture; USGS Bolivar topographic quadrangle; latitude 27 degrees 32 minutes 24 seconds N.; longitude 93 degrees 27 minutes 17 seconds E.; UTM coordinates 4,159,290 meters Northing and 459,800 meters Easting:

Ap—0 to 6 inches; very dark gray (10YR 3/1) gravelly silt loam, dark grayish brown (10YR 4/2) dry; weak medium granular structure; friable; many fine roots; 25 percent chert gravel; moderately acid; clear smooth boundary.

A—6 to 18 inches; very dark grayish brown (10YR 3/2) very gravelly silt loam, brown (10YR 5/3) dry; moderate medium granular structure; friable; many fine roots; 55 percent chert gravel; slightly acid; gradual wavy boundary.

Bt1—18 to 24 inches; dark brown (7.5YR 3/4) extremely gravelly silt loam; weak fine subangular blocky structure; friable; common fine roots; many distinct continuous clay films on faces of peds; 65 percent chert gravel and 3 percent chert cobbles; slightly acid; gradual wavy boundary.

2Bt2—24 to 30 inches; yellowish red (5YR 4/6) very gravelly clay; moderate fine subangular blocky structure; firm; common fine roots; very few distinct continuous clay films on faces of peds; 45 percent chert gravel; moderately acid; gradual wavy boundary.

3Bt3—30 to 40 inches; red (2.5YR 4/6) clay; moderate fine angular blocky structure; firm; few fine roots; very few distinct continuous clay films on faces of peds; 10 percent chert gravel; very strongly acid; gradual wavy boundary.

3Bt4—40 to 72 inches; red (2.5YR 4/6) clay; moderate fine angular blocky structure; firm; few fine roots; very few distinct continuous clay films on faces of peds; common yellowish red (5YR 5/8) masses of iron accumulation; 10 percent chert gravel; very strongly acid; abrupt wavy boundary.

3R—72 to 80 inches; dolostone.

Range in Characteristics

Thickness of the mollic epipedon: 12 to 20 inches

Depth to the argillic horizon: 10 to 25 inches

Depth to the lithic contact: 62 to 80 inches

Ap and A horizons:

Color—hue of 10YR, value of 3, and chroma of 1 or 2

Texture of the fine-earth fraction—silt loam

Content of rock fragments—15 to 35 percent

Reaction—strongly acid to slightly acid (pH 5.1 to 6.5)

Bt horizon:

Color—hue of 2.5YR, 5YR, or 7.5YR, value of 3 or 4, and chroma of 3, 4, or 6

Texture of the fine-earth fraction—silt loam or silty clay loam

Content of rock fragments—45 to 75 percent

Reaction—strongly acid to slightly acid (pH 5.1 to 6.5)

2Bt horizon:

Color—hue of 2.5YR, 5YR, or 7.5YR, value of 4 or 5, and chroma of 4 or 6

Texture of the fine-earth fraction—clay or silty clay

Content of rock fragments—35 to 55 percent

Reaction—very strongly acid to slightly acid (pH 4.5 to 6.5)

3Bt horizon:

Color—hue of 2.5YR or 5YR, value of 4, and chroma of 4 or 6

Redoximorphic features—masses of iron accumulation

Texture of the fine-earth fraction—clay or silty clay

Content of rock fragments—0 to 15 percent

Reaction—very strongly acid to neutral (pH 4.5 to 7.3)

Cleora Series

Depth to bedrock: Very deep (more than 60 inches)

Drainage class: Well drained

Permeability: Moderately rapid

Landform: Flood plains in river valleys

Parent material: Alluvium

Slope class: Nearly level (0 to 2 percent)

Elevation: 840 feet

Taxonomic classification: Coarse-loamy, mixed, active, thermic Fluventic Hapludolls

Typical Pedon

Cleora fine sandy loam, 0 to 2 percent slopes, frequently flooded; 1,800 feet west and 1,700 feet south of the northeast corner of sec. 5, T. 34 N., R. 28 W.; in a pasture; USGS Montevello topographic quadrangle; UTM coordinates 4,178,349 meters Northing and 410,123 meters Easting:

Ap—0 to 12 inches; dark brown (10YR 3/3) fine sandy loam, brown (10YR 5/3) dry; weak fine granular structure; friable; few very fine roots; neutral; clear smooth boundary.

Bw—12 to 22 inches; brown (10YR 4/3) fine sandy loam; weak very fine subangular blocky structure; friable; few very fine roots; common distinct dark brown (10YR 3/3) organic coats on faces of peds; slightly acid; abrupt smooth boundary.

C1—22 to 38 inches; brown (10YR 4/3) and dark brown (10YR 3/3) fine sandy loam; massive; friable; few very fine roots; few thin strata of pale brown (10YR 6/3) fine sandy loam; common distinct dark brown (10YR 3/3) organic coats on faces of peds; moderately acid; clear smooth boundary.

C2—38 to 52 inches; brown (10YR 4/3) loam; massive; friable; few very fine and fine roots; few thin strata of pale brown (10YR 6/3) fine sandy loam; few distinct very dark grayish brown (10YR 3/2) organic coats on faces of peds; moderately acid; clear smooth boundary.

C3—52 to 66 inches; brown (10YR 4/3) fine sandy

loam; massive; friable; few very fine roots; thin strata of pale brown (10YR 6/3) fine sandy loam; few distinct dark brown (10YR 3/3) organic coats on faces of peds and few distinct skeletons on faces of peds; moderately acid; clear smooth boundary.

C4—66 to 80 inches; brown (10YR 4/3) loam; massive; friable; few very fine roots; few thin strata of pale brown (10YR 6/3) fine sandy loam; few distinct very dark grayish brown (10YR 3/2) organic coats on faces of peds and few distinct black stains in root channels and/or pores; moderately acid.

Range in Characteristics

Thickness of the mollic epipedon: 12 to 17 inches

Ap or A horizon:

Color—hue of 10YR, value of 3, and chroma of 2 or 3

Texture of the fine-earth fraction—fine sandy loam

Content of rock fragments—none

Reaction—moderately acid to neutral (pH 5.6 to 7.3)

Bw horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 3 or 4

Texture of the fine-earth fraction—fine sandy loam or loam

Content of rock fragments—none

Reaction—moderately acid to neutral (pH 5.6 to 7.3)

C horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 3 or 4

Texture of the fine-earth fraction—stratified fine sandy loam or loam

Content of rock fragments—none

Reaction—moderately acid to neutral (pH 5.6 to 7.3)

Cliquot Series

Depth to bedrock: Deep (40 to 60 inches)

Drainage class: Moderately well drained

Permeability: Slow

Landform: Hills or ridges on uplands

Position on the landform: Backslopes or summits

Parent material: Colluvium over clayey residuum derived from sandstone and shale

Slope class: Gently sloping to moderately steep (3 to 20 percent)

Elevation: 1,020 feet

Taxonomic classification: Fine, mixed, semiactive, mesic Oxyaquic Hapludults

Typical Pedon

Cliquot gravelly loam, 3 to 20 percent slopes, very stony (fig. 15); 5,500 feet south and 10 feet east of the northwest corner of sec. 2, T. 34 N., R. 25 W.; in a pasture; USGS Bearcreek topographic quadrangle; UTM coordinates 4,175,369 meters Northing and 443,035 meters Easting:

- A—0 to 4 inches; brown (10YR 4/3) gravelly loam, pale brown (10YR 6/3) dry; weak fine granular structure; friable; many fine roots; 25 percent subrounded sandstone gravel and 10 percent subrounded sandstone cobbles; moderately acid; abrupt smooth boundary.
- BE—4 to 10 inches; strong brown (7.5YR 5/6) very gravelly loam; weak very fine subangular blocky structure; friable; many fine roots; common silt coats on faces of peds; few fine dark nodules; 5 percent subrounded limestone-cherty gravel, 35 percent subrounded sandstone gravel, and 15 percent subrounded sandstone cobbles; very strongly acid; clear smooth boundary.
- 2Bt1—10 to 24 inches; yellowish red (5YR 4/6) clay; few fine prominent strong brown (7.5YR 5/8) and few fine prominent red (2.5YR 4/6) mottles; moderate fine subangular blocky structure; firm; common fine roots; common prominent clay films on faces of peds; few fine strong brown (7.5YR 5/8) masses of iron accumulation and few fine red (2.5YR 4/6) masses of iron accumulation; 5 percent shale channers; very strongly acid; clear smooth boundary.
- 2Bt2—24 to 41 inches; strong brown (7.5YR 5/6) clay; many medium prominent red (2.5YR 4/6) mottles; moderate fine subangular blocky structure; firm; few fine roots; few distinct clay films on faces of peds; many medium red (2.5YR 4/6) masses of iron accumulation; 10 percent shale channers; very strongly acid; gradual smooth boundary.
- 2Bt3—41 to 48 inches; strong brown (7.5YR 5/6) channery silty clay; common medium prominent red (2.5YR 4/6) mottles; weak fine subangular blocky structure; firm; few fine roots; common distinct clay films on faces of peds; common medium red (2.5YR 4/6) masses of iron accumulation; 10 percent shale channers and 15 percent shale parachanners; very strongly acid; clear smooth boundary.
- 2BC—48 to 55 inches; strong brown (7.5YR 5/6) very channery silty clay; common medium prominent



Figure 15.—Profile of Cliquot gravelly loam, 3 to 20 percent slopes, very stony. Depth is marked in centimeters.

red (2.5YR 4/6) mottles; weak fine subangular blocky structure; firm; few fine roots; common fine masses of iron-manganese accumulation and common medium red (2.5YR 4/6) masses of iron accumulation and common fine grayish brown (10YR 5/2) iron depletions; 20 percent shale channers and 25 percent shale parachanners; very strongly acid; clear smooth boundary.

2Cr—55 to 65 inches; shale.

Range in Characteristics

Thickness of the ochric epipedon: 6 to 26 inches

Depth to the argillic horizon: 6 to 26 inches

Depth to paralithic contact: 40 to 60 inches

Depth to lithic contact: 48 to 80 inches

A or Ap horizon:

Color—hue of 10YR, value of 3 or 4, and chroma of 2 or 3
 Redoximorphic features—none
 Texture of the fine-earth fraction—loam or fine sandy loam
 Content of rock fragments—5 to 25 percent
 Reaction—very strongly acid or moderately acid (pH 4.5 to 6.0)

E horizon (if it occurs):

Color—hue of 10YR, value of 3 to 5, and chroma of 4 or 6
 Redoximorphic features—none
 Texture of the fine-earth fraction—fine sandy loam or loam
 Content of rock fragments—25 to 50 percent
 Reaction—very strongly acid or moderately acid (pH 4.5 to 6.0)

BE horizon:

Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 or 6
 Redoximorphic features—none
 Texture of the fine-earth fraction—fine sandy loam, loam, or silt loam
 Content of rock fragments—25 to 55 percent
 Reaction—very strongly acid or moderately acid (pH 4.5 to 6.0)

2Bt horizon:

Color—hue of 2.5YR, 5YR, 7.5YR, or 10YR, value of 4 to 6, and chroma of 2 to 8
 Redoximorphic features—none
 Texture of the fine-earth fraction—silty clay loam, silty clay, or clay
 Content of rock fragments—0 to 35 percent
 Reaction—very strongly acid or strongly acid (pH 4.5 to 5.5)

2BC horizon:

Color—hue of 2.5YR, 5YR, 7.5YR, 10YR, or 2.5Y, value of 5 or 6, and chroma of 2 to 6
 Redoximorphic features—none
 Texture of the fine-earth fraction—silty clay or clay
 Content of rock fragments—5 to 45 percent
 Reaction—very strongly acid or strongly acid (pH 4.5 to 5.5)

Collinsville Series

Depth to bedrock: Shallow (4 to 20 inches)

Drainage class: Well drained

Permeability: Moderately rapid

Landform: Hills on uplands

Position on the landform: Backslopes

Parent material: Residuum derived from sandstone

Slope class: Moderately sloping and strongly sloping (3 to 15 percent)

Elevation: 880 feet

Taxonomic classification: Loamy, siliceous, superactive, thermic Lithic Hapludolls

Typical Pedon

Collinsville fine sandy loam, in an area of Collinsville-Rock outcrop complex, 3 to 15 percent slopes; 550 feet north and 150 feet west of the southeast corner of sec. 13, T. 36 N., R. 27 W.; in a forest; USGS Roscoe topographic quadrangle; UTM coordinates 4,192,750 meters Northing and 425,560 meters Easting:

A—0 to 6 inches; dark brown (10YR 3/3) fine sandy loam, brown (10YR 5/3) dry; weak very fine granular structure; friable; many very fine roots; many very fine vesicular and tubular pores; 10 percent sandstone gravel; slightly alkaline; clear smooth boundary.

Bw—6 to 15 inches; dark yellowish brown (10YR 3/4) gravelly fine sandy loam; weak very fine subangular blocky structure; friable; common very fine roots; common very fine vesicular and tubular pores; 20 percent sandstone gravel and 10 percent sandstone cobbles; neutral; abrupt smooth boundary.

R—15 to 80 inches; sandstone.

Range in Characteristics

A horizon:

Color—hue of 10YR and value and chroma of 3
 Texture of the fine-earth fraction—fine sandy loam
 Content of rock fragments—0 to 15 percent
 Reaction—very strongly acid to slightly alkaline (pH 4.5 to 7.8)

Bw horizon:

Color—hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 4
 Texture of the fine-earth fraction—fine sandy loam or loam
 Content of rock fragments—0 to 30 percent
 Reaction—very strongly acid to neutral (pH 4.5 to 7.3)

Cotter Series

Depth to bedrock: Very deep (more than 60 inches)

Drainage class: Well drained

Permeability: Moderate

Landform: Flood-plain steps in river valleys

Parent material: Alluvium

Slope class: Nearly level (0 to 2 percent)

Elevation: 774 feet

Taxonomic classification: Fine-silty, mixed, superactive, mesic Pachic Argiudolls

Typical Pedon

Cotter silt loam, 0 to 2 percent slopes, rarely flooded; 2,780 feet south and 1,490 feet east of the northwest corner of sec. 4, T. 34 N., R. 26 W.; in a pasture; USGS Stockton topographic quadrangle; UTM coordinates 4,176,930 meters Northing and 430,663 meters Easting:

Ap—0 to 10 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak fine granular structure; friable; many fine roots; many fine vesicular and tubular pores; slightly acid; clear smooth boundary.

Bt1—10 to 19 inches; dark brown (7.5YR 3/2) silt loam, brown (7.5YR 5/3) dry; weak fine subangular blocky structure; friable; many fine roots; many fine vesicular and tubular pores; few faint clay films on faces of peds and in pores; slightly acid; clear smooth boundary.

Bt2—19 to 33 inches; dark brown (7.5YR 3/3) silty clay loam, brown (7.5YR 5/3) dry; weak fine subangular blocky structure; friable; common fine roots; common fine vesicular and tubular pores; few distinct clay films on faces of peds and in pores; neutral; clear smooth boundary.

2Btb1—33 to 60 inches; very dark grayish brown (10YR 3/2) silty clay loam, grayish brown (10YR 5/2) dry; weak fine subangular blocky structure; friable; few fine roots; few fine vesicular and tubular pores; few prominent clay films on faces of peds and in pores; neutral; clear smooth boundary.

2Btb2—60 to 72 inches; brown (7.5YR 4/3) silty clay loam; weak fine subangular blocky structure; friable; few fine roots; few fine vesicular and tubular pores; few prominent clay films on faces of peds and in pores, common prominent continuous silt coats on faces of peds and in pores, and many distinct very dark grayish brown (10YR 3/2) organic coats on faces of peds and in pores; slightly acid; clear smooth boundary.

2Btb3—72 to 80 inches; brown (7.5YR 4/4) silty clay loam; weak fine subangular blocky structure; friable; few fine roots; few fine vesicular and tubular pores; many prominent clay films on faces of peds and in pores, few prominent continuous silt coats on faces of peds and in pores, and common distinct dark brown (7.5YR 3/2) organic coats on faces of peds and in pores; slightly acid.

Range in Characteristics

Thickness of the mollic epipedon: 25 to 60 inches

Depth to the argillic horizon: 10 to 23 inches

Ap or A horizon:

Color—hue of 10YR, value of 2 or 3, and chroma of 1 or 2

Texture of the fine-earth fraction—silt loam

Content of rock fragments—none

Reaction—strongly acid to neutral (pH 5.1 to 7.3)

Bt horizon:

Color—hue of 10YR or 7.5YR, value of 3 or 4, and chroma of 2 or 3

Texture of the fine-earth fraction—silt loam or silty clay loam

Content of rock fragments—none

Reaction—strongly acid to neutral (pH 5.1 to 7.3)

2Btb horizon:

Color—hue of 10YR or 7.5YR, value of 3 or 4, and chroma of 2 to 4

Texture of the fine-earth fraction—silty clay loam

Content of rock fragments—none

Reaction—moderately acid to neutral (pH 5.6 to 7.3)

Courtois Series

Depth to bedrock: Very deep (more than 60 inches)

Drainage class: Well drained

Permeability: Moderate

Landform: Strath terraces in river valleys

Position on the landform: Summits

Parent material: Loess over gravelly colluvium over clayey residuum

Slope class: Gently sloping (2 to 5 percent)

Elevation: 935 feet

Taxonomic classification: Fine, mixed, active, mesic Typic Paleudalfs

Typical Pedon

Courtois silt loam, 2 to 5 percent slopes; 1,380 feet south and 1,980 feet west of the northeast corner of sec. 16, T. 33 N., R. 25 W.; in a forest; USGS Bona topographic quadrangle; UTM coordinates 4,161,390 meters Northing and 440,160 meters Easting:

A—0 to 4 inches; dark reddish brown (5YR 3/4) silt loam; moderate very fine granular structure; friable; many very fine and fine roots; 3 percent limestone-cherty gravel; neutral; abrupt smooth boundary.

Bt1—4 to 8 inches; yellowish red (5YR 4/6) silt loam; moderate very fine subangular blocky structure;

firm; many very fine roots; many distinct clay films on faces of peds; 3 percent limestone-cherty gravel; neutral; clear smooth boundary.

Bt2—8 to 17 inches; red (2.5YR 4/6) silty clay loam; moderate very fine subangular blocky structure; firm; many very fine roots; many distinct clay films on faces of peds; 3 percent limestone-cherty gravel; neutral; clear smooth boundary.

Bt3—17 to 30 inches; red (2.5YR 4/6) silty clay; moderate very fine subangular blocky structure; firm; many very fine roots; many distinct clay films on faces of peds; 3 percent limestone-cherty gravel; neutral; clear smooth boundary.

2Bt4—30 to 49 inches; red (2.5YR 4/6) extremely stony clay; moderate very fine subangular blocky structure; firm; many very fine roots; many distinct clay films on faces of peds and few prominent manganese or iron-manganese stains on faces of peds; 20 percent limestone-cherty gravel and 20 percent limestone-cherty cobbles and 20 percent limestone-cherty stones; slightly acid; gradual smooth boundary.

3Bt5—49 to 71 inches; red (2.5YR 4/6) stony clay; strong medium prismatic structure parting to moderate fine angular blocky; firm; common very fine roots; many prominent pressure faces and many distinct clay films on faces of peds and common prominent manganese or iron-manganese stains on faces of peds; 5 percent limestone-cherty gravel, 10 percent limestone-cherty cobbles, and 15 percent limestone-cherty stones; moderately acid; gradual smooth boundary.

3Bt6—71 to 80 inches; red (2.5YR 4/6) stony clay; strong medium prismatic structure parting to moderate fine angular blocky; firm; many prominent pressure faces and many distinct clay films on faces of peds and few distinct manganese or iron-manganese stains on faces of peds; 5 percent limestone-cherty gravel, 5 percent limestone-cherty cobbles, and 10 percent limestone-cherty stones; slightly acid.

Range in Characteristics

Thickness of the ochric epipedon: 4 to 10 inches

Depth to the 2Bt horizon: 16 to 33 inches

A or Ap horizon:

Color—hue of 10YR, 7.5YR, or 5YR, value of 3 or 4, and chroma of 2 to 4

Texture of the fine-earth fraction—silt loam

Content of rock fragments—0 to 10 percent

Reaction—strongly acid to neutral (pH 5.1 to 7.3)

BE horizon or E horizon (if it occurs):

Color—hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 4 to 6

Texture of the fine-earth fraction—silt loam

Content of rock fragments—0 to 20 percent

Reaction—strongly acid to neutral (pH 5.1 to 7.3)

Bt horizon:

Color—hue of 2.5YR, 5YR, or 7.5YR, value of 3 or 4, and chroma of 4 to 6

Texture of the fine-earth fraction—silty clay loam or silty clay

Content of rock fragments—0 to 20 percent

Reaction—strongly acid to neutral (pH 5.1 to 7.3)

2Bt horizon:

Color—hue of 2.5YR or 10R, value of 3 to 5, and chroma of 4 to 6

Redoximorphic features—masses of iron accumulation

Texture of the fine-earth fraction—clay or silty clay

Content of rock fragments—25 to 70 percent

Reaction—strongly acid to neutral (pH 5.1 to 7.3)

3Bt horizon:

Color—hue of 2.5YR or 10R, value of 3 to 5, and chroma of 4 to 6

Redoximorphic features—masses of iron accumulation

Texture of the fine-earth fraction—clay or silty clay

Content of rock fragments—0 to 20 percent

Reaction—strongly acid to neutral (pH 5.1 to 7.3)

Creldon Series

Depth to bedrock: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Permeability: Moderately slow above the fragipan; very slow in the fragipan

Landform: Divides on uplands

Position on the landform: Summits

Parent material: Loess over gravelly colluvium over clayey residuum derived from cherty limestone

Slope class: Very gently sloping (1 to 3 percent)

Elevation: 1,140 feet

Taxonomic classification: Fine, mixed, active, mesic Oxyaquic Fragiudalfs

Typical Pedon

Creldon silt loam, 1 to 3 percent slopes; 2,500 feet south and 150 feet east of the northwest corner of sec. 26, T. 30 N., R. 28 W.; in an area of cropland; USGS Kings Point topographic quadrangle; UTM coordinates

4,129,590 meters Northing and 412,200 meters Easting:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate fine granular structure; friable; common fine roots; 5 percent chert gravel; neutral; clear smooth boundary.

Bt1—8 to 12 inches; brown (10YR 4/3) silty clay, pale brown (10YR 6/3) dry; weak very fine and fine subangular blocky structure; friable; common fine roots; few faint patchy clay films on faces of peds; few fine brown (10YR 4/3) masses of iron accumulation; 5 percent chert gravel; slightly acid; clear wavy boundary.

Bt2—12 to 19 inches; brown (10YR 4/3) clay; moderate fine subangular blocky structure; firm; common fine roots; common distinct clay films; many fine brown (7.5YR 4/4) masses of iron accumulation; 5 percent chert gravel; slightly acid; clear smooth boundary.

Bt3—19 to 27 inches; dark yellowish brown (10YR 4/4) silty clay; moderate very fine subangular blocky structure; firm; few fine roots; many distinct clay films on faces of peds; few fine brown (7.5YR 4/4) masses of iron accumulation; 10 percent chert gravel; slightly acid; clear wavy boundary.

2Btx—27 to 37 inches; grayish brown (10YR 5/2) very gravelly silt loam; moderate very coarse prismatic structure parting to weak fine subangular blocky; very firm, brittle; few faint clay films on rock fragments; 55 percent chert gravel; strongly acid; clear wavy boundary.

3Bt—37 to 60 inches; red (2.5YR 4/6) very gravelly clay; moderate fine subangular blocky structure; very firm; common distinct clay films on faces of peds; common coarse yellowish brown (10YR 5/6) masses of iron accumulation; 40 percent chert gravel; slightly acid.

Range in Characteristics

Thickness of the ochric epipedon: 8 to 14 inches

Depth to the argillic horizon: 8 to 25 inches

Depth to the 3Bt horizon: 37 to 55 inches

Depth to the fragipan: 19 to 32 inches

Ap horizon:

Color—hue of 10YR, value of 3, and chroma of 2 or 3

Redoximorphic features—masses of iron accumulation

Texture of the fine-earth fraction—silt loam

Content of rock fragments—0 to 5 percent

Reaction—very strongly acid to neutral (pH 4.5 to 7.3)

BA horizon (if it occurs):

Color—hue of 10YR, value of 3 to 6, and chroma of 2 to 4

Redoximorphic features—masses of iron accumulation

Texture of the fine-earth fraction—silty clay loam

Content of rock fragments—none

Reaction—slightly acid (pH 6.1 to 6.5)

Bt horizon:

Color—hue of 5YR, 7.5YR, or 10YR, value of 3 to 5, and chroma of 2 to 6

Redoximorphic features—iron depletions or masses of iron accumulation

Texture of the fine-earth fraction—silty clay loam, clay, or silty clay

Content of rock fragments—0 to 10 percent

Reaction—very strongly acid to slightly acid (pH 4.5 to 6.5)

2Btx horizon:

Color—hue of 2.5YR, 5YR, 7.5YR, or 10YR, value of 4 to 6, and chroma of 2 to 6

Redoximorphic features—iron depletions

Texture of the fine-earth fraction—silt loam or silty clay loam

Content of rock fragments—20 to 60 percent

Reaction—extremely acid to strongly acid (pH 3.5 to 5.5)

3Bt horizon:

Color—hue of 2.5YR, 5YR, or 7.5YR, value of 3 to 5, and chroma of 4 to 8

Redoximorphic features—iron depletions or masses of iron accumulation

Texture of the fine-earth fraction—clay

Content of rock fragments—12 to 70 percent

Reaction—very strongly acid to slightly acid (pH 4.5 to 6.5)

Dameron Series

Depth to bedrock: Very deep (more than 60 inches)

Drainage class: Well drained

Permeability: Moderate

Landform: Flood plains in river valleys

Parent material: Alluvium

Slope class: Nearly level and very gently sloping (0 to 3 percent)

Elevation: 950 feet

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Cumulic Hapludolls

Typical Pedon

Dameron silt loam, 0 to 3 percent slopes, frequently

flooded; 3,200 feet north and 2,800 feet west of the southeast corner of sec. 12, T. 31 N., R. 25 W.; in a pasture; USGS Dadeville topographic quadrangle; UTM coordinates 4,143,030 meters Northing and 444,570 meters Easting:

- Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak fine granular structure; friable; many fine roots; strongly acid; clear smooth boundary.
- A—9 to 15 inches; very dark grayish brown (10YR 3/2) silty clay loam, brown (10YR 5/3) dry; weak fine granular structure; friable; many fine roots; moderately acid; clear smooth boundary.
- Bw1—15 to 24 inches; dark brown (7.5YR 3/2) very gravelly clay loam, grayish brown (10YR 5/2) dry; weak fine subangular blocky structure; firm; common fine roots; 40 percent chert gravel; moderately acid; abrupt smooth boundary.
- Bw2—24 to 48 inches; very dark brown (10YR 2/2) gravelly silty clay loam, grayish brown (10YR 5/2) dry; weak fine subangular blocky structure; firm; few fine roots; 20 percent chert gravel; moderately acid; abrupt smooth boundary.
- Bw3—48 to 60 inches; very dark brown (10YR 2/2) gravelly silty clay loam, grayish brown (10YR 5/2) dry; moderate fine subangular blocky structure; firm; few fine roots; 20 percent chert gravel; moderately acid; clear smooth boundary.
- Bw4—60 to 72 inches; very dark brown (10YR 2/2) silty clay loam; weak fine subangular blocky structure; firm; few fine roots; slightly acid; clear smooth boundary.
- Bw5—72 to 80 inches; very dark brown (10YR 2/2) extremely gravelly clay loam; weak fine subangular blocky structure; firm; few fine roots; 65 percent chert gravel; slightly acid.

Range in Characteristics

Thickness of the mollic epipedon: 70 to 80 inches

Ap horizon:

Color—hue of 10YR, value of 3, and chroma of 2
 Texture of the fine-earth fraction—silt loam
 Content of rock fragments—none
 Reaction—strongly acid to neutral (pH 5.1 to 7.3)

A horizon:

Color—hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 2
 Texture of the fine-earth fraction—silt loam or silty clay loam
 Content of rock fragments—0 to 10 percent
 Reaction—strongly acid to neutral (pH 5.1 to 7.3)

Bw horizon:

Color—hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 2
 Texture of the fine-earth fraction—clay loam or silty clay loam
 Content of rock fragments—0 to 65 percent
 Reaction—strongly acid to neutral (pH 5.1 to 7.3)

2Bw horizon (if it occurs):

Color—hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 1 or 2
 Texture of the fine-earth fraction—loam, clay loam, or silty clay loam
 Content of rock fragments—20 to 55 percent
 Reaction—moderately acid (pH 5.6 to 6.0)

Eldorado Series

Depth to bedrock: Very deep (more than 60 inches)

Drainage class: Well drained

Permeability: Moderate

Landform: Hills on uplands

Position on the landform: Shoulders

Parent material: Gravelly colluvium over clayey residuum derived from cherty limestone

Slope class: Moderately sloping and strongly sloping (3 to 15 percent)

Elevation: 1,010 feet

Taxonomic classification: Loamy-skeletal, mixed, active, thermic Typic Paleudolls

Typical Pedon

Eldorado gravelly loam, 3 to 15 percent slopes, very stony; 2,400 feet south and 600 feet east of the northwest corner of sec. 7, T. 31 N., R. 27 W.; in a pasture; USGS Lockwood topographic quadrangle; UTM coordinates 4,144,050 meters Northing and 416,020 meters Easting:

A1—0 to 8 inches; very dark grayish brown (10YR 3/2) gravelly loam, brown (10YR 5/3) dry; moderate fine granular structure; very friable; common fine and medium roots; 15 percent chert gravel and 5 percent chert cobbles; moderately acid; clear smooth boundary.

A2—8 to 13 inches; dark brown (7.5YR 3/2) cobbly loam, brown (7.5YR 5/2) dry; weak fine subangular blocky structure; friable; common fine and medium roots; 10 percent chert gravel and 10 percent chert cobbles; slightly acid; clear smooth boundary.

Bt1—13 to 22 inches; brown (7.5YR 4/3) very cobbly clay loam; moderate fine subangular blocky

structure; firm; common fine and medium roots; few distinct clay films on faces of peds; few fine and medium iron-manganese concretions; 15 percent chert gravel and 20 percent chert cobbles; slightly acid; clear wavy boundary.

Bt2—22 to 33 inches; brown (7.5YR 4/4) very cobbly clay loam; moderate fine subangular blocky structure; firm; common fine and medium roots; common distinct clay films on faces of peds; few fine dark red (2.5YR 3/6) masses of iron accumulation and common fine and medium masses of iron-manganese accumulation; 15 percent chert gravel and 30 percent chert cobbles; slightly acid; gradual wavy boundary.

2Bt3—33 to 45 inches; yellowish red (5YR 4/6) very cobbly clay; moderate fine subangular blocky structure; firm; common fine roots; many distinct clay films on faces of peds; few fine dark red (2.5YR 3/6) masses of iron accumulation, few medium strong brown (7.5YR 5/6) masses of iron accumulation, and common fine masses of iron-manganese accumulation; 20 percent chert gravel and 35 percent chert cobbles; moderately acid; clear wavy boundary.

2Bt4—45 to 60 inches; strong brown (7.5YR 5/6) cobbly clay; moderate fine angular blocky structure; firm; few fine roots; many distinct clay films on faces of peds; few fine dark red (2.5YR 3/6) masses of iron accumulation and common fine masses of iron-manganese accumulation; 5 percent chert gravel, 15 percent chert cobbles, and 10 percent chert stones; slightly acid.

Range in Characteristics

Thickness of the mollic epipedon: 13 to 17 inches

Depth to the argillic horizon: 6 to 13 inches

Ap horizon (if it occurs):

Color—hue of 10YR and value and chroma of 2
Redoximorphic features—none
Texture of the fine-earth fraction—silt loam
Content of rock fragments—20 to 30 percent
Reaction—moderately acid (pH 5.6 to 6.0)

A horizon:

Color—hue of 7.5YR or 10YR, value of 3, and chroma of 2
Redoximorphic features—none
Texture of the fine-earth fraction—loam or silt loam
Content of rock fragments—20 to 40 percent
Reaction—moderately acid or slightly acid (pH 5.6 to 6.5)

Bt horizon:

Color—hue of 2.5YR, 5YR, 7.5YR, or 10YR, value of 3 to 6, and chroma of 3 to 8

Redoximorphic features—masses of iron accumulation

Texture of the fine-earth fraction—silty clay loam or clay loam

Content of rock fragments—35 to 65 percent

Reaction—moderately acid or slightly acid (pH 5.6 to 6.5)

2Bt horizon:

Color—hue of 5YR or 7.5YR, value of 4 to 6, and chroma of 4 to 8

Redoximorphic features—none

Texture of the fine-earth fraction—clay or silty clay loam

Content of rock fragments—25 to 65 percent

Reaction—moderately acid or slightly acid (pH 5.6 to 6.5)

2BC horizon (if it occurs):

Color—hue of 5YR, value of 5, and chroma of 6

Redoximorphic features—none

Texture of the fine-earth fraction—clay loam or clay

Content of rock fragments—60 percent

Reaction—strongly acid (pH 5.1 to 5.5)

Gatewood Series

Depth to bedrock: Moderately deep (20 to 40 inches)

Drainage class: Moderately well drained

Permeability: Slow

Landform: Hills on uplands

Position on the landform: Backslopes

Parent material: Gravelly colluvium over clayey residuum derived from dolostone

Slope class: Moderately sloping to steep (15 to 35 percent)

Elevation: 1,020 feet

Taxonomic classification: Very fine, mixed, active, mesic Oxyaquic Hapludalfs

Typical Pedon

Gatewood gravelly silt loam, in an area of Ocic-Gatewood complex, 15 to 35 percent slopes; in a forested area; 900 feet west and 1,320 feet north of the southeast corner of sec. 19, T. 35 N., R. 22 W.; USGS Elkton topographic quadrangle; UTM coordinates 4,179,960 meters Northing and 465,140 meters Easting:

A—0 to 4 inches; dark grayish brown (10YR 4/2) gravelly silt loam; weak fine granular structure; friable; few fine roots; 34 percent chert gravel; slightly acid; abrupt smooth boundary.

E—4 to 7 inches; brown (10YR 5/3) very gravelly silt

loam; weak fine granular structure; friable; few fine roots; 40 percent chert gravel; moderately acid; abrupt smooth boundary.

2Bt1—7 to 13 inches; dark yellowish brown (10YR 4/6) gravelly clay; moderate fine subangular blocky structure; very firm; few fine and medium roots; many distinct clay films on faces of peds; many fine yellowish brown (10YR 5/6) masses of iron accumulation; 30 percent chert gravel; moderately acid; gradual smooth boundary.

2Bt2—13 to 28 inches; yellowish brown (10YR 5/6) clay; weak fine subangular blocky structure; very firm; few fine and medium roots; many distinct clay films on faces of peds; many fine yellowish brown (10YR 5/6) masses of iron accumulation; 5 percent chert gravel; slightly acid; abrupt smooth boundary.

2R—28 to 80 inches; dolostone.

Range in Characteristics

Thickness of the ochric epipedon: 4 to 15 inches

Depth to the argillic horizon: 7 to 15 inches

Depth to the lithic contact: 20 to 40 inches

A horizon:

Color—hue of 10YR, value of 2 to 4, and chroma of 1 to 3

Texture of the fine-earth fraction—silt loam

Content of rock fragments—0 to 35 percent

Reaction—strongly acid to neutral (pH 5.1 to 7.3)

E horizon:

Color—hue of 10YR, value of 5 or 6, and chroma of 3 or 4

Texture of the fine-earth fraction—silt loam

Content of rock fragments—8 to 60 percent

Reaction—strongly acid to neutral (pH 5.1 to 7.3)

2Bt horizon:

Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 8

Redoximorphic features—iron depletions, iron-manganese concretions, or masses of iron accumulation

Texture of the fine-earth fraction—clay

Content of rock fragments—3 to 35 percent

Reaction—very strongly acid or neutral (pH 4.5 to 7.3)

Goss Series

Depth to bedrock: Very deep (more than 60 inches)

Drainage class: Well drained

Permeability: Moderate

Landform: Ridges or hills on uplands

Position on the landform: Backslopes or shoulders

Parent material: Gravelly colluvium over clayey residuum derived from cherty limestone

Slope class: Moderately sloping to steep (3 to 35 percent)

Elevation: 1,185 feet

Taxonomic classification: Clayey-skeletal, mixed, active, mesic Typic Paleudalfs

Typical Pedon

Goss gravelly silt loam, 8 to 15 percent slopes (fig. 16); 2,000 feet east and 1,950 feet south of the northwest corner of sec. 12, T. 31 N., R. 22 W.; in a pasture; USGS Pleasant Hope topographic quadrangle; UTM coordinates 4,142,330 meters Northing and 473,230 meters Easting:

A—0 to 4 inches; very dark grayish brown (10YR 3/2) gravelly silt loam, light brownish gray (10YR 6/2) dry; weak very fine granular structure; very friable; many medium and coarse roots; 25 percent chert gravel; slightly acid; clear smooth boundary.

E—4 to 10 inches; light yellowish brown (10YR 6/4) very cobbly silt loam; weak very fine granular structure; very friable; many medium and coarse roots; 40 percent chert gravel and 20 percent chert cobbles; strongly acid; clear wavy boundary.

BE—10 to 16 inches; light brown (7.5YR 6/4) very gravelly silt loam; moderate very fine subangular blocky structure; very friable; common fine to coarse roots; few faint silt coats on faces of peds; many fine strong brown (7.5YR 5/6) masses of iron accumulation; 40 percent chert gravel and 20 percent chert cobbles; moderately acid; gradual wavy boundary.

2Bt1—16 to 47 inches; brown (7.5YR 5/4), yellowish red (5YR 5/6), and red (10R 4/6) very cobbly clay; moderate very fine subangular blocky structure; very firm; few very fine roots; many distinct clay films on faces of peds; 20 percent chert cobbles and 15 percent chert gravel; very strongly acid; gradual smooth boundary.

2Bt2—47 to 60 inches; yellowish red (5YR 5/8), red (2.5YR 5/8), and red (10R 4/8) very cobbly clay; moderate fine angular blocky structure; very firm; many prominent clay films on faces of peds; 30 percent chert cobbles and 10 percent chert gravel; very strongly acid.

Range in Characteristics

Thickness of the ochric epipedon: 6 to 24 inches

Depth to the argillic horizon: 6 to 24 inches

Note: These soils do not meet the minimum wetness criteria for the Oxyaquic subgroup.



Figure 16.—Profile of Goss gravelly silt loam. Depth is marked in inches.

A or Ap horizon:

Color—hue of 7.5YR or 10YR and value and chroma of 2 to 4
 Texture of the fine-earth fraction—silt loam
 Content of rock fragments—15 to 55 percent
 Reaction—very strongly acid to slightly acid (pH 4.5 to 6.5)

E horizon:

Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 or 4
 Texture of the fine-earth fraction—silt loam or silty clay loam
 Content of rock fragments—22 to 75 percent
 Reaction—very strongly acid to slightly acid (pH 4.5 to 6.5)

BE or Bt horizon:

Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 or 4
 Redoximorphic features—masses of iron accumulation
 Texture of the fine-earth fraction—silt loam or silty clay loam
 Content of rock fragments—35 to 70 percent
 Reaction—very strongly acid to slightly acid (pH 4.5 to 6.5)

2Bt horizon:

Color—hue of 10R, 2.5YR, 5YR, or 7.5YR, value of 3 to 5, and chroma of 3 to 8
 Redoximorphic features—masses of iron accumulation
 Texture of the fine-earth fraction—silty clay loam, silty clay, or clay
 Content of rock fragments—5 to 70 percent
 Reaction—very strongly acid to neutral (pH 4.5 to 7.3)

Hartville Series

Depth to bedrock: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Permeability: Slow

Landform: Paleoterraces in river valleys

Position on the landform: Footslopes

Parent material: Silty alluvium over clayey colluvium

Slope class: Moderately sloping (3 to 8 percent)

Elevation: 880 feet

Taxonomic classification: Fine, mixed, active, mesic Aquic Hapludalfs

Typical Pedon

Hartville silt loam, 3 to 8 percent slopes; 2,550 feet south and 400 feet east of the northwest corner of sec. 1, T. 32 N., R. 25 W.; in a pasture; USGS Aldrich topographic quadrangle; UTM coordinates 4,154,330 meters Northing and 445,350 meters Easting:

Ap—0 to 6 inches; brown (10YR 4/3) and dark brown (10YR 3/3) silt loam, pale brown (10YR 6/3) dry; moderate fine granular structure; friable; many very fine and fine roots; common fine dark concretions; moderately acid; clear smooth boundary.

BE—6 to 10 inches; brown (10YR 4/3) and yellowish brown (10YR 5/4) silt loam; weak very fine and fine subangular blocky structure parting to moderate fine granular; friable; many very fine and fine roots; common fine and medium dark

concretions; 5 percent chert gravel; moderately acid; clear smooth boundary.

Bt1—10 to 17 inches; yellowish brown (10YR 5/4) silty clay; moderate fine subangular blocky structure; firm; common very fine and fine roots; common distinct continuous brown (10YR 4/3) (moist) clay films on faces of peds; few fine dark concretions and many fine dark red (2.5YR 3/6) soft masses of iron accumulation; 2 percent chert gravel; strongly acid; clear smooth boundary.

Bt2—17 to 31 inches; grayish brown (10YR 5/2) silty clay; moderate fine subangular blocky structure; firm; common very fine roots; few distinct continuous brown (10YR 4/3) clay films on faces of peds, common distinct continuous clay films throughout, and few distinct manganese or iron-manganese stains throughout; few fine dark concretions, common fine yellowish red (5YR 4/6) masses of iron accumulation, and many fine yellowish brown (10YR 5/6) masses of iron accumulation; 2 percent chert gravel; very strongly acid; gradual smooth boundary.

2Bt3—31 to 40 inches; light brownish gray (10YR 6/2) and yellowish brown (10YR 5/6) silty clay loam; moderate fine subangular blocky structure; firm; common very fine roots; common distinct discontinuous clay films throughout; common fine and medium dark concretions and few fine yellowish red (5YR 4/6) masses of iron accumulation; 2 percent chert gravel; slightly acid; gradual smooth boundary.

2Bt4—40 to 60 inches; light brownish gray (10YR 6/2) and yellowish brown (10YR 5/6) silty clay loam; moderate fine and medium subangular blocky structure; firm; common distinct discontinuous clay films on faces of peds and few distinct manganese or iron-manganese stains throughout; common medium dark concretions and common fine dark yellowish brown (10YR 4/4) masses of iron accumulation; 2 percent chert gravel; neutral.

Range in Characteristics

Thickness of the ochric epipedon: 10 to 13 inches

Depth to the argillic horizon: 10 to 13 inches

Ap or A horizon:

Color—hue of 10YR, value of 3 or 4, and chroma of 2 or 3

Redoximorphic features—none

Texture of the fine-earth fraction—silt loam

Content of rock fragments—none

Reaction—very strongly acid to neutral (pH 4.5 to 7.3)

BE horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 3 to 6

Redoximorphic features—none

Texture of the fine-earth fraction—silt loam or silty clay loam

Content of rock fragments—0 to 5 percent

Reaction—very strongly acid to neutral (pH 4.5 to 7.3)

Bt horizon:

Color—hue of 10YR, value of 4 to 6, and chroma of 2 to 6

Redoximorphic features—masses of iron accumulation

Texture of the fine-earth fraction—silty clay loam or silty clay

Content of rock fragments—0 to 5 percent

Reaction—very strongly acid to neutral (pH 4.5 to 7.3)

2Bt horizon:

Color—hue of 10YR, value of 5 or 6, and chroma of 1 to 6

Redoximorphic features—masses of iron accumulation

Texture of the fine-earth fraction—silty clay loam, silty clay, or clay

Content of rock fragments—0 to 10 percent

Reaction—slightly acid or neutral (pH 6.1 to 7.3)

Hoberg Series

Depth to bedrock: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Permeability: Moderate above the fragipan; slow in the fragipan

Landform: Ridges on uplands

Position on the landform: Summits

Parent material: Fine-loamy colluvium over clayey residuum derived from cherty limestone

Slope class: Gently sloping (2 to 5 percent)

Elevation: 1,010 feet

Taxonomic classification: Fine-loamy, siliceous, active, mesic Oxyaquic Fragiudalfs

Typical Pedon

Hoberg silt loam, 2 to 5 percent slopes; 2,400 feet east and 300 feet south of the northwest corner of sec. 3, T. 30 N., R. 26 W.; in a pasture; USGS South Greenfield topographic quadrangle; UTM coordinates 4,136,180 meters Northing and 430,970 meters Easting:

Ap—0 to 7 inches; dark brown (7.5YR 3/2) silt loam,

brown (7.5YR 4/4) dry; weak thin platy structure parting to moderate medium granular; friable; many fine and medium roots; 5 percent gravel; strongly acid; abrupt smooth boundary.

BA—7 to 12 inches; dark yellowish brown (10YR 4/4) silt loam; moderate medium granular structure; friable; many fine and medium roots; 5 percent gravel; moderately acid; clear smooth boundary.

Bt1—12 to 17 inches; dark brown (7.5YR 3/4) silt loam; moderate fine subangular blocky structure; friable; many fine and medium roots; few faint clay films on faces of peds; few fine iron-manganese concretions; 5 percent gravel; moderately acid; clear smooth boundary.

Bt2—17 to 26 inches; dark brown (7.5YR 3/4) gravelly silt loam; moderate very fine and fine subangular blocky structure; firm; many fine and medium roots; few faint clay films on faces of peds; 15 percent gravel and 5 percent cobbles; moderately acid; abrupt wavy boundary.

2Btx1—26 to 33 inches; strong brown (7.5YR 4/6) and dark brown (7.5YR 3/4) extremely cobbly silt loam; moderate very coarse prismatic structure parting to weak thin platy; very firm, brittle; few fine roots in cracks; common faint clay films on faces of peds; few fine masses of iron accumulation; 40 percent gravel and 30 percent cobbles; moderately acid; gradual smooth boundary.

2Btx2—33 to 42 inches; strong brown (7.5YR 4/6) and reddish yellow (7.5YR 6/8) extremely cobbly silty clay loam; moderate very coarse prismatic structure parting to weak thin platy; very firm, brittle; common faint clay films on faces of peds; few fine masses of iron accumulation; 40 percent gravel and 30 percent cobbles; strongly acid; clear smooth boundary.

3Bt1—42 to 52 inches; dark red (2.5YR 3/6) extremely cobbly silty clay; moderate very fine angular blocky structure; firm; many distinct clay films on faces of peds; few fine masses of iron accumulation; 40 percent gravel and 35 percent cobbles; very strongly acid; clear smooth boundary.

3Bt2—52 to 62 inches; dark red (2.5YR 3/6) extremely cobbly clay; moderate fine angular blocky structure; very firm; many distinct clay films on faces of peds; few fine masses of iron accumulation; 35 percent gravel and 25 percent cobbles; strongly acid.

Range in Characteristics

Thickness of the ochric epipedon: 8 to 17 inches

Depth to the argillic horizon: 8 to 17 inches

Depth to the fragipan: 20 to 36 inches

Ap horizon:

Color—hue of 7.5YR or 10YR and value and chroma of 2 or 3

Redoximorphic features—none

Texture of the fine-earth fraction—silt loam

Content of rock fragments—0 to 12 percent

Reaction—strongly acid to neutral (pH 5.1 to 7.3)

BA horizon:

Color—hue of 10YR, value of 3 or 4, and chroma of 2 to 4

Redoximorphic features—none

Texture of the fine-earth fraction—silt loam

Content of rock fragments—0 to 5 percent

Reaction—strongly acid to neutral (pH 5.1 to 7.3)

Bt horizon:

Color—hue of 5YR, 7.5YR, or 10YR, value of 3 to 5, and chroma of 3 to 6

Redoximorphic features—iron depletions

Texture of the fine-earth fraction—silt loam or silty clay loam

Content of rock fragments—0 to 30 percent

Reaction—strongly acid to slightly acid (pH 5.1 to 6.5)

2Btx horizon:

Color—hue of 2.5YR, 5YR, or 7.5YR, value of 3 to 6, and chroma of 2 to 6

Redoximorphic features—iron depletions

Texture of the fine-earth fraction—silt loam or silty clay loam

Content of rock fragments—30 to 80 percent

Reaction—extremely acid to moderately acid (pH 3.5 to 6.0)

3Bt horizon:

Color—hue of 2.5YR or 5YR, value of 3 to 5, and chroma of 4 to 6

Redoximorphic features—none

Texture of the fine-earth fraction—silty clay or clay

Content of rock fragments—40 to 75 percent

Reaction—extremely acid to moderately acid (pH 3.5 to 6.0)

Hobson Series

Depth to bedrock: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Permeability: Moderate above the fragipan; slow in the fragipan

Landform: Ridges on uplands

Position on the landform: Summits

Parent material: Loamy colluvium over residuum derived from sandstone and shale

Slope class: Very gently sloping (1 to 3 percent)

Elevation: 985 feet

Taxonomic classification: Fine-loamy, siliceous, active, mesic Oxyaquic Fragiudalfs

Typical Pedon

Hobson loam, 1 to 3 percent slopes; 1,500 feet east and 100 feet north of the southwest corner of sec. 26, T. 32 N., R. 26 W.; in a pasture; USGS Greenfield topographic quadrangle; UTM coordinates 4,147,590 meters Northing and 432,710 meters Easting:

Ap—0 to 4 inches; brown (10YR 4/3) loam; weak medium granular structure; friable; many fine roots; very strongly acid; abrupt smooth boundary.

E—4 to 8 inches; brown (10YR 5/3) and yellowish brown (10YR 5/4) loam; weak medium granular structure; friable; many fine roots; strongly acid; clear smooth boundary.

Bt1—8 to 13 inches; yellowish brown (10YR 5/4) loam; weak fine subangular blocky structure; friable; common fine roots; very few distinct clay films on faces of peds; few fine iron-manganese concretions; moderately acid; clear smooth boundary.

Bt2—13 to 19 inches; yellowish brown (10YR 5/4) and strong brown (7.5YR 4/6) clay loam; moderate medium subangular blocky structure; friable; common fine roots; few distinct clay films on faces of peds; few fine masses of iron accumulation; moderately acid; abrupt smooth boundary.

2Btx1—19 to 30 inches; grayish brown (10YR 5/2) loam; moderate very coarse prismatic structure parting to weak medium platy; firm, brittle; many medium roots in mat at top of horizon; very few faint clay films on vertical faces of peds; common medium masses of iron accumulation, common fine yellowish red (5YR 5/6) masses of iron accumulation, and common fine strong brown (7.5YR 4/6) masses of iron accumulation; strongly acid; clear wavy boundary.

2Btx2—30 to 40 inches; dark red (2.5YR 3/6), gray (10YR 6/1), and brownish yellow (10YR 6/6) clay loam; moderate coarse prismatic structure parting to weak medium platy; firm, brittle; few distinct clay films on vertical faces of peds; common fine masses of iron accumulation; very strongly acid; clear smooth boundary.

3Bt1—40 to 55 inches; gray (10YR 6/1), dark red (2.5YR 3/6), and brownish yellow (10YR 6/6) clay loam; weak medium subangular blocky structure; firm; few distinct clay films on faces of peds; common fine masses of iron accumulation; very strongly acid; clear smooth boundary.

3Bt2—55 to 72 inches; dark red (2.5YR 3/6), gray

(10YR 6/1), and brownish yellow (10YR 6/6) clay loam; moderate fine and medium subangular blocky structure; firm; few distinct clay films on faces of peds; common fine masses of iron accumulation; strongly acid.

Range in Characteristics

Thickness of the ochric epipedon: 7 to 12 inches

Depth to the argillic horizon: 7 to 12 inches

Depth to the fragipan: 19 to 27 inches

Ap horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 2 or 3

Redoximorphic features—none

Texture of the fine-earth fraction—loam

Content of rock fragments—0 to 10 percent

Reaction—very strongly acid to moderately acid (pH 4.5 to 6.0)

E horizon:

Color—hue of 10YR, value of 5, and chroma of 3 or 4

Redoximorphic features—none

Texture of the fine-earth fraction—loam

Content of rock fragments—0 to 5 percent

Reaction—very strongly acid to moderately acid (pH 4.5 to 6.0)

EB or BE horizon (if it occurs):

Color—hue of 10YR, value of 4 or 5, and chroma of 3 to 6

Redoximorphic features—none

Texture of the fine-earth fraction—loam or sandy loam

Content of rock fragments—none

Reaction—very strongly acid to moderately acid (pH 4.5 to 6.0)

Bt horizon:

Color—hue of 5YR, 7.5YR, or 10YR, value of 4 or 5, and chroma of 4 to 6

Redoximorphic features—none

Texture of the fine-earth fraction—sandy clay loam, loam, or clay loam

Content of rock fragments—0 to 10 percent

Reaction—very strongly acid to moderately acid (pH 4.5 to 6.0)

2Btx horizon:

Color—hue of 2.5YR, 5YR, 7.5YR, or 10YR, value of 3 to 6, and chroma of 1 to 6

Redoximorphic features—iron depletions or masses of iron accumulation

Texture of the fine-earth fraction—fine sandy loam, loam, or clay loam

Content of rock fragments—0 to 20 percent

Reaction—very strongly acid or strongly acid (pH 4.5 to 5.5)

2C horizon (if it occurs):

Color—hue of 10YR, value of 5 or 6, and chroma of 2 to 6

Redoximorphic features—none

Texture of the fine-earth fraction—fine sandy loam

Content of rock fragments—0 to 30 percent

Reaction—moderately acid (pH 5.6 to 6.0)

3Bt horizon:

Color—hue of 2.5YR, 5YR, or 10YR, value of 3 to 6, and chroma of 1 to 8

Redoximorphic features—masses of iron accumulation

Texture of the fine-earth fraction—sandy clay loam or clay loam

Content of rock fragments—0 to 50 percent

Reaction—very strongly acid or strongly acid (pH 4.5 to 5.5)

Horsecreek Series

Depth to bedrock: Very deep (more than 60 inches)

Drainage class: Well drained

Permeability: Moderate

Landform: Stream terraces in river valleys

Parent material: Fine-silty alluvium

Slope class: Nearly level (0 to 2 percent)

Elevation: 1,000 feet

Taxonomic classification: Fine-silty, mixed, active, mesic Mollic Hapludalfs

Typical Pedon

Horsecreek silt loam, 0 to 2 percent slopes, occasionally flooded; 2,460 feet south and 500 feet east of the northwest corner of sec. 18, T. 32 N., R. 21 W.; in an area of hayland; USGS Cedar Vista topographic quadrangle; UTM coordinates 4,150,210 meters Northing and 474,580 meters Easting:

Ap—0 to 9 inches; dark brown (10YR 3/3) silt loam, brown (10YR 5/3) dry; moderate fine granular structure; friable; common fine and common medium roots; slightly acid; clear smooth boundary.

A—9 to 18 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine subangular blocky structure; friable; common fine and few medium roots; few distinct silt coats on faces of peds; neutral; gradual smooth boundary.

Bt1—18 to 53 inches; brown (7.5YR 4/4) silt loam; moderate medium subangular blocky structure; firm; common fine roots; distinct continuous clay

films and common distinct silt coats on faces of peds; strongly acid; gradual smooth boundary.

Bt2—53 to 60 inches; dark brown (7.5YR 3/4) silty clay loam; moderate coarse subangular blocky structure; firm; few fine roots; distinct continuous clay films and few distinct silt coats on faces of peds; strongly acid.

Range in Characteristics

Thickness of the ochric epipedon: 8 to 18 inches

Depth to the argillic horizon: 8 to 18 inches

Ap horizon:

Color—hue of 10YR, value of 3, and chroma of 2 or 3

Texture of the fine-earth fraction—silt loam

Reaction—moderately acid to neutral (pH 5.6 to 7.3)

A horizon:

Color—hue of 10YR, value of 4, and chroma of 3 or 4

Texture of the fine-earth fraction—silt loam

Reaction—moderately acid to neutral (pH 5.6 to 7.3)

Bt horizon:

Color—hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 3, 4, or 6

Texture of the fine-earth fraction—silt loam or silty clay loam

Reaction—strongly acid to neutral (pH 5.1 to 7.3)

Humansville Series

Depth to bedrock: Very deep (more than 60 inches)

Drainage class: Poorly drained

Permeability: Moderately slow

Landform: Flood plains in river valleys

Parent material: Fine-silty alluvium

Slope class: Nearly level (0 to 2 percent)

Elevation: 890 feet

Taxonomic classification: Fine-silty, mixed, superactive, mesic Cumulic Endoaquolls

Typical Pedon

Humansville silt loam, 0 to 2 percent slopes, frequently flooded; 2,000 feet north and 2,400 feet west of the southeast corner of sec. 20, T. 35 N., R. 21 W.; in an area of cropland; USGS Sentinel topographic quadrangle; UTM coordinates 4,179,710 meters Northing and 476,020 meters Easting:

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2)

silt loam, dark gray (10YR 4/1) dry; weak fine granular structure; friable; common very fine roots; moderately acid; clear smooth boundary.

A—7 to 24 inches; very dark gray (10YR 3/1) silty clay loam, dark gray (10YR 4/1) dry; weak very fine granular structure; firm; common brown (10YR 4/3) masses of iron accumulation; slightly acid; gradual smooth boundary.

Bg1—24 to 44 inches; dark grayish brown (10YR 4/2) silty clay loam; weak fine subangular blocky structure; firm; many distinct very dark gray (10YR 3/1) organic coats on faces of peds; few fine dark yellowish brown (10YR 4/4) masses of iron accumulation; neutral; gradual smooth boundary.

Bg2—44 to 60 inches; grayish brown (10YR 5/2) silty clay loam; moderate fine subangular blocky structure; firm; common distinct very dark gray (10YR 3/1) organic coats on faces of peds; common dark yellowish brown (10YR 4/4 and 4/6) masses of iron accumulation; neutral.

Range in Characteristics

Thickness of the mollic epipedon: 24 to 30 inches

Depth to the cambic horizon: 24 to 30 inches

Ap horizon:

Color—hue of 10YR, value of 3, and chroma of 2

Texture of the fine-earth fraction—silt loam

Reaction—strongly acid to neutral (pH 5.1 to 7.3)

A horizon:

Color—hue of 10YR, value of 2 or 3, and chroma of 1 or 2

Redoximorphic features—masses of iron accumulation

Texture of the fine-earth fraction—silt loam or silty clay loam

Reaction—slightly acid or neutral (pH 6.1 to 7.3)

Bg horizon:

Color—hue of 10YR, value of 4 to 6, and chroma of 2

Redoximorphic features—masses of iron accumulation

Texture of the fine-earth fraction—silty clay loam or silty clay

Content of rock fragments—0 to 3 percent

Reaction—slightly acid or neutral (pH 6.1 to 7.3)

Kanima Series

Depth to bedrock: Very deep (more than 60 inches)

Drainage class: Well drained

Permeability: Moderate

Landform: Hills on uplands

Position on the landform: Backslopes

Parent material: Loamy mine spoil or earthy fill derived from sandstone and shale

Slope class: Strongly sloping to very steep (8 to 50 percent)

Elevation: 920 feet

Taxonomic classification: Loamy-skeletal, mixed, active, nonacid, thermic Alfic Udarents

Typical Pedon

Kanima very channery silt loam, 8 to 50 percent slopes; 300 feet north and 500 feet east of the southwest corner of sec. 32, T. 33 N., R. 28 W.; USGS Jerico Springs topographic quadrangle; UTM coordinates 4,156,420 meters Northing and 408,345 meters Easting:

A—0 to 8 inches; very dark grayish brown (10YR 3/2) very channery silt loam, grayish brown (10YR 5/2) dry; moderate fine granular structure; friable; common fine roots; 3 percent coal channers; 40 percent shale channers; slightly acid; gradual wavy boundary.

C1—8 to 24 inches; dark grayish brown (10YR 4/2) and grayish brown (10YR 5/2) extremely channery silt loam; massive; friable; common fine roots; 5 percent coal channers; common fragments of very dark gray (10YR 3/1) granular silt loam material from the surface layer and yellowish brown (10YR 5/4) silty clay loam fragments with common distinct clay films; very few distinct silt coats throughout; 45 percent shale channers and 15 percent shale flagstones; moderately acid; gradual wavy boundary.

C2—24 to 60 inches; brown (10YR 4/3) and dark grayish brown (10YR 4/2) very channery silt loam; massive; friable; few fine roots; 3 percent coal channers; few fragments of very dark gray (10YR 3/1) granular silt loam material from the surface layer and common yellowish brown (10YR 5/4) silty clay loam fragments with common distinct clay films; common distinct silt coats throughout; 40 percent shale channers; moderately acid.

Range in Characteristics

Thickness of the ochric epipedon: 6 to 8 inches

A horizon:

Color—hue of 10YR, value of 3, and chroma of 2

Texture of the fine-earth fraction—silt loam

Content of rock fragments—40 percent

Reaction—moderately acid to moderately alkaline (pH 5.6 to 8.4)

C horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 2 or 3

Texture of the fine-earth fraction—silt loam, loam, or silty clay loam

Content of rock fragments—40 to 60 percent

Reaction—moderately acid to moderately alkaline (pH 5.6 to 8.4)

Moko Series

Depth to bedrock: Shallow (4 to 20 inches)

Drainage class: Well drained

Permeability: Moderate

Landform: Hills on uplands

Position on the landform: Backslopes

Parent material: Gravelly residuum derived from cherty limestone

Slope class: Moderately sloping to steep (3 to 35 percent)

Elevation: 920 feet

Taxonomic classification: Loamy-skeletal, mixed, superactive, mesic Lithic Hapludolls

Typical Pedon

Moko gravelly silt loam, in an area of Sonsac-Moko complex, 15 to 35 percent slopes, rocky; 2,450 feet south and 290 feet west of the northeast corner of sec. 23, T. 32 N., R. 26 W.; in a forested area; USGS Greenfield topographic quadrangle; UTM coordinates 4,150,050 meters Northing and 433,660 meters Easting:

A1—0 to 6 inches; very dark grayish brown (10YR 3/2) gravelly silt loam, grayish brown (10YR 5/2) dry; moderate fine granular structure; friable; many fine and medium roots; 30 percent chert gravel; neutral; clear smooth boundary.

A2—6 to 14 inches; dark brown (10YR 3/3) very gravelly silty clay loam, grayish brown (10YR 5/2) dry; moderate fine granular structure; friable; common fine and medium roots; 40 percent chert gravel; neutral; abrupt wavy boundary.

R—14 to 80 inches; limestone.

Range in Characteristics

Thickness of the mollic epipedon: 6 to 17 inches

A horizon:

Color—hue of 10YR, value of 2 or 3, and chroma of 1 to 3

Texture of the fine-earth fraction—silt loam, clay loam, or silty clay loam

Content of rock fragments—15 to 65 percent

Reaction—neutral or slightly alkaline (pH 6.6 to 7.8)

Moniteau Series

Depth to bedrock: Very deep (more than 60 inches)

Drainage class: Poorly drained

Permeability: Moderately slow

Landform: Stream terraces in river valleys

Parent material: Fine-silty alluvium

Slope class: Nearly level (0 to 2 percent)

Elevation: 885 feet

Taxonomic classification: Fine-silty, mixed, superactive, mesic Typic Endoaqualfs

Typical Pedon

Moniteau silt loam, 0 to 2 percent slopes, occasionally flooded; 1,320 feet south and 500 feet west of the northeast corner of sec. 30, T. 35 N., R. 21 W.; in an area of cropland; USGS Sentinel topographic quadrangle; UTM coordinates 4,178,700 meters Northing and 474,960 meters Easting:

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam, light gray (10YR 7/2) dry; weak fine granular structure; friable; common fine roots; slightly acid; abrupt smooth boundary.

E—6 to 18 inches; grayish brown (10YR 5/2) silt loam; moderate fine granular structure; very friable; common fine roots; few distinct manganese or iron-manganese stains; slightly acid; clear smooth boundary.

Btg1—18 to 27 inches; dark grayish brown (10YR 4/2) silt loam; weak very fine subangular blocky structure; very friable; common fine roots; common distinct clay films and common distinct light brownish gray (10YR 6/2) silt coats on faces of peds; few fine iron-manganese concretions and common fine dark yellowish brown (10YR 4/4) masses of iron accumulation; strongly acid; gradual smooth boundary.

Btg2—27 to 36 inches; grayish brown (10YR 5/2) silty clay loam; weak very fine subangular blocky structure; firm; common fine roots; few distinct clay films and common distinct light brownish gray (10YR 6/2) silt coats on faces of peds; common fine dark yellowish brown (10YR 4/6) masses of iron accumulation and few fine iron-manganese concretions throughout; very strongly acid; gradual smooth boundary.

Btg3—36 to 60 inches; gray (10YR 5/1) silty clay loam; weak very fine subangular blocky structure; firm;

few fine roots; few distinct clay films and common distinct light brownish gray (10YR 6/2) silt coats on faces of peds; common fine iron-manganese concretions; strongly acid.

Range in Characteristics

Thickness of the ochric epipedon: 10 to 22 inches

Depth to the argillic horizon: 10 to 22 inches

Depth to the albic horizon: 6 to 9 inches

Ap horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 2

Texture of the fine-earth fraction—silt loam

Reaction—strongly acid to slightly acid (pH 5.1 to 6.5)

E horizon:

Color—hue of 10YR, value of 5 to 7, and chroma of 1 or 2

Redoximorphic features—masses of iron accumulation

Texture of the fine-earth fraction—silt loam

Reaction—strongly acid to slightly acid (pH 5.1 to 6.5)

Btg horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 1 or 2

Redoximorphic features—masses of iron accumulation

Texture of the fine-earth fraction—silt loam or silty clay loam

Reaction—very strongly acid to moderately acid (pH 4.5 to 6.0)

Ocie Series

Depth to bedrock: Deep (40 to 60 inches)

Drainage class: Moderately well drained

Permeability: Slow

Landform: Hills on uplands

Position on the landform: Backslopes

Parent material: Gravelly colluvium over clayey residuum derived from dolostone

Slope class: Moderately sloping to steep (3 to 35 percent)

Elevation: 1,000 feet

Taxonomic classification: Loamy-skeletal over clayey, mixed, semiactive, mesic Oxyaquic Hapludalfs

Typical Pedon

Ocie gravelly silt loam, 3 to 15 percent slopes; 400 feet west and 2,000 feet south of the northeast corner of

sec. 28, T. 35 N., R. 21 W.; in a forested area; USGS Urbana topographic quadrangle; UTM coordinates 4,178,420 meters Northing and 483,320 meters Easting:

A—0 to 4 inches; very dark grayish brown (10YR 3/2) gravelly silt loam, grayish brown (10YR 5/2) dry; moderate very fine granular structure; friable; many coarse roots; 34 percent chert gravel; neutral; clear smooth boundary.

E—4 to 10 inches; brown (10YR 5/3) very gravelly silt loam; weak very fine subangular blocky structure; friable; many coarse roots; 40 percent chert gravel; slightly acid; clear smooth boundary.

Bt1—10 to 19 inches; yellowish brown (10YR 5/4) very gravelly silt loam; strong fine subangular blocky structure; firm; common medium roots; few distinct brown (10YR 4/3) clay films and common distinct brown (10YR 5/3) silt coats on faces of peds; 40 percent chert gravel; moderately acid; gradual smooth boundary.

2Bt2—19 to 33 inches; brown (7.5YR 5/4) and yellowish brown (10YR 5/6) clay; strong fine angular blocky structure; very firm; common medium roots; common distinct clay films on faces of peds; few pressure faces; few fine reddish brown (5YR 4/4) masses of iron accumulation; 15 percent chert gravel; moderately acid; gradual smooth boundary.

2Bt3—33 to 39 inches; yellowish brown (10YR 5/6) and brownish yellow (10YR 6/6) clay; few fine distinct brown (10YR 5/3) mottles; strong fine and medium angular blocky structure; very firm; few fine roots; common distinct clay films on faces of peds; common pressure faces; few fine reddish brown (5YR 4/4) masses of iron accumulation; 12 percent chert gravel; strongly acid; gradual smooth boundary.

2Bt4—39 to 47 inches; yellowish brown (10YR 5/6) gravelly clay; strong fine and medium angular blocky structure; very firm; few fine roots; common distinct clay films on faces of peds; common pressure faces; common fine light brownish gray (10YR 6/2) and common fine grayish brown (10YR 5/2) iron depletions and few fine reddish brown (5YR 4/4) masses of iron accumulation; 30 percent chert gravel; strongly acid; gradual smooth boundary.

2Bt5—47 to 52 inches; yellowish brown (10YR 5/4) and dark yellowish brown (10YR 4/4) very gravelly clay; moderate fine and medium angular blocky structure; very firm; few fine roots; common distinct clay films on faces of peds; few pressure faces; few fine yellowish brown (10YR 5/6)

masses of iron accumulation and few fine gray (2.5Y 6/1) iron depletions; 40 percent chert gravel; strongly acid; abrupt smooth boundary.
2R—52 to 60 inches; unweathered dolostone.

Range in Characteristics

Thickness of the ochric epipedon: 5 to 19 inches
Depth to the argillic horizon: 5 to 19 inches
Depth to the paralithic contact: 42 to 45 inches
Depth to the lithic contact: 40 to 60 inches

A horizon:

Color—hue of 10YR, value of 3 to 5, and chroma of 2 or 3
Texture of the fine-earth fraction—silt loam
Content of rock fragments—15 to 55 percent
Reaction—very strongly acid to neutral (pH 4.5 to 7.3)

E horizon:

Color—hue of 10YR, value of 5 or 6, and chroma of 3 or 4
Texture of the fine-earth fraction—loam or silt loam
Content of rock fragments—20 to 70 percent
Reaction—very strongly acid to slightly acid (pH 4.5 to 6.5)

Bt horizon:

Color—hue of 7.5YR or 10YR and value and chroma of 4 to 6
Redoximorphic features—masses of iron accumulation
Texture of the fine-earth fraction—loam, silt loam, clay loam, or silty clay loam
Content of rock fragments—25 to 85 percent
Reaction—very strongly acid to moderately acid (pH 4.5 to 6.0)

2Bt horizon:

Color—hue of 2.5YR, 5YR, 7.5YR, or 10YR, value of 4 to 7, and chroma of 2 to 8
Redoximorphic features—iron depletions or masses of iron accumulation
Texture of the fine-earth fraction—clay or silty clay
Content of rock fragments—0 to 30 percent
Reaction—very strongly acid to neutral (pH 4.5 to 7.3)

Parsons Series

Depth to bedrock: Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Permeability: Very slow
Landform: Divides on uplands
Position on the landform: Summits

Parent material: Silty and clayey colluvium

Slope class: Nearly level (0 to 2 percent)

Elevation: 1,065 feet

Taxonomic classification: Fine, mixed, active, thermic Mollic Albaqualfs

Typical Pedon

Parsons silt loam, 0 to 2 percent slopes; 1,350 feet south and 2,500 feet west of the northeast corner of sec. 32, T. 32 N., R. 27 W.; in an area of cropland; USGS Lockwood topographic quadrangle; UTM coordinates 4,147,520 meters Northing and 418,340 meters Easting:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak medium platy structure; very friable; many fine and medium roots; few fine dark yellowish brown (10YR 4/4) masses of iron accumulation; slightly acid; abrupt smooth boundary.

E—8 to 16 inches; grayish brown (10YR 5/2) silt loam; weak very thin platy structure; very friable; many fine roots; few fine dark yellowish brown (10YR 4/6) masses of iron-manganese accumulation; strongly acid; clear smooth boundary.

Btg1—16 to 24 inches; dark gray (10YR 4/1) clay; moderate medium subangular blocky structure; firm; many fine roots; few faint clay films on faces of peds; common medium dark red (2.5YR 3/6) masses of iron accumulation; strongly acid; clear smooth boundary.

Btg2—24 to 31 inches; dark gray (10YR 4/1) and grayish brown (10YR 5/2) silty clay; moderate fine subangular blocky structure; firm; few fine roots; few faint clay films on faces of peds; common fine yellowish brown (10YR 5/6) masses of iron-manganese accumulation; very strongly acid; clear smooth boundary.

Btg3—31 to 60 inches; grayish brown (10YR 5/2) silty clay loam; strong very fine subangular blocky structure; firm; few fine roots; few faint clay films on faces of peds; common fine strong brown (7.5YR 4/6) masses of iron-manganese accumulation; strongly acid.

Range in Characteristics

Thickness of the ochric epipedon: 8 to 18 inches
Depth to the argillic horizon: 12 to 18 inches
Depth to abrupt textural change: 12 to 18 inches
Depth to the albic horizon: 8 to 9 inches

Ap horizon:

Color—hue of 10YR, value of 3, and chroma of 2
Redoximorphic features—masses of iron accumulation

Texture of the fine-earth fraction—silt loam
 Content of rock fragments—none
 Reaction—strongly acid to slightly acid (pH 5.1 to 6.5)

E horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 2
 Redoximorphic features—masses of iron-manganese accumulation
 Texture of the fine-earth fraction—silt loam
 Content of rock fragments—none
 Reaction—strongly acid to slightly acid (pH 5.1 to 6.5)

Btg horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 1 or 2
 Redoximorphic features—masses of iron accumulation or masses of iron-manganese accumulation
 Texture of the fine-earth fraction—silty clay loam, silty clay, or clay
 Content of rock fragments—none
 Reaction—strongly acid to slightly acid (pH 5.1 to 6.5)

Plato Series

Depth to bedrock: Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Permeability: Moderately slow above the fragipan; very slow in the fragipan
Landform: Ridges on uplands
Position on the landform: Summits
Parent material: Loess over colluvium over residuum derived from cherty limestone
Slope class: Very gently sloping (1 to 3 percent)
Elevation: 1,120 feet
Taxonomic classification: Fine, mixed, active, mesic Aquic Fragiudalfs

Typical Pedon

Plato silt loam, 1 to 3 percent slopes; 4,425 feet east and 160 feet north of the southwest corner of sec. 32, T. 34 N., R. 21 W.; in a pasture; USGS Cedar Vista topographic quadrangle; UTM coordinates 4,163,790 meters Northing and 477,740 meters Easting:

Ap—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; friable; many coarse roots; strongly acid; clear smooth boundary.

E—5 to 9 inches; pale brown (10YR 6/3) and light brownish gray (10YR 6/2) silt loam; weak fine

granular structure; friable; common very fine roots; very strongly acid; clear wavy boundary.

Bt1—9 to 16 inches; yellowish brown (10YR 5/4) silty clay; moderate fine subangular blocky structure; firm; few fine roots; many distinct clay films on faces of peds; common fine grayish brown (10YR 5/2) iron depletions; strongly acid; gradual smooth boundary.

Bt2—16 to 23 inches; yellowish brown (10YR 5/4) and brown (10YR 5/3) silty clay; moderate fine subangular blocky structure; firm; few fine roots; many prominent clay films on faces of peds; few fine grayish brown (10YR 5/2) iron depletions; very strongly acid; clear smooth boundary.

Bt3—23 to 29 inches; grayish brown (10YR 5/2) silty clay; moderate fine subangular blocky structure; firm; few fine roots; many distinct clay films on faces of peds; common medium yellowish brown (10YR 5/6) masses of iron accumulation; 5 percent chert gravel; very strongly acid; clear wavy boundary.

2Btx1—29 to 38 inches; light brownish gray (10YR 6/2) silt loam; moderate coarse and very coarse prismatic structure; very firm, brittle; few fine roots in cracks; few distinct clay films in root channels and/or pores; common medium yellowish brown (10YR 5/6) masses of iron accumulation; strongly acid; gradual smooth boundary.

2Btx2—38 to 65 inches; light gray (10YR 7/1) silty clay loam; moderate medium prismatic structure parting to moderate fine subangular blocky; friable, brittle; few distinct clay films in root channels and/or pores; common medium yellowish brown (10YR 5/6) masses of iron accumulation; very strongly acid.

Range in Characteristics

Thickness of the ochric epipedon: 9 to 12 inches

Depth to the argillic horizon: 9 to 12 inches

Depth to the fragipan: 24 to 36 inches

Ap horizon:

Color—hue of 10YR, value of 4 to 6, and chroma of 2 or 3

Texture of the fine-earth fraction—silt loam

Reaction—very strongly acid to neutral (pH 4.5 to 7.3)

E horizon:

Color—hue of 10YR, value of 5 or 6, and chroma of 2 or 3

Texture of the fine-earth fraction—silt loam

Reaction—very strongly acid to moderately acid (pH 4.5 to 6.0)

Bt horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 4 to 6
 Redoximorphic features—iron depletions or masses of iron accumulation
 Texture of the fine-earth fraction—silty clay, clay, or silty clay loam
 Content of rock fragments—0 to 5 percent
 Reaction—extremely acid to strongly acid (pH 3.5 to 5.5)

2Btx horizon:

Color—hue of 10YR, value of 6 or 7, and chroma of 1 or 2
 Redoximorphic features—masses of iron accumulation
 Texture of the fine-earth fraction—silt loam or silty clay loam
 Content of rock fragments—0 to 30 percent
 Reaction—extremely acid to strongly acid (pH 3.5 to 5.5)

3Bt horizon (if it occurs):

Color—hue of 5YR, 7.5YR, or 10YR, value of 3 to 6, and chroma of 4 to 6
 Redoximorphic features—masses of iron accumulation
 Texture of the fine-earth fraction—silty clay loam, silty clay, or clay
 Reaction—strongly acid to neutral (pH 5.1 to 7.3)

Pomme Series

Depth to bedrock: Very deep (more than 60 inches)

Drainage class: Well drained

Permeability: Moderate

Landform: Strath terraces in river valleys

Position on the landform: Summits

Parent material: Loess over gravelly colluvium over clayey residuum derived from cherty limestone

Slope class: Very gently sloping to moderately sloping (1 to 8 percent)

Elevation: 1,090 feet

Taxonomic classification: Fine-loamy, mixed, semiactive, mesic Typic Paleudalfs

Typical Pedon

Pomme silt loam, 1 to 3 percent slopes; 200 feet east and 1,500 feet south of the northwest corner of sec. 35, T. 31 N., R. 27 W.; in a pasture; USGS Lockwood topographic quadrangle; UTM coordinates 4,137,740 meters Northing and 422,180 meters Easting:

Ap—0 to 8 inches; brown (10YR 4/3) silt loam; weak

medium granular structure; very friable; common fine and medium roots; slightly acid; abrupt smooth boundary.

Bt1—8 to 15 inches; brown (7.5YR 4/4) silt loam; moderate medium subangular blocky structure parting to weak fine granular; friable; common fine and medium roots; few faint clay films on faces of peds; slightly acid; clear smooth boundary.

Bt2—15 to 26 inches; brown (7.5YR 4/4) silt loam; moderate medium subangular blocky structure; friable; few fine and medium roots; few faint clay films on faces of peds; common fine iron-manganese concretions; 5 percent chert gravel; slightly acid; clear wavy boundary.

2Bt3—26 to 32 inches; yellowish red (5YR 4/6) gravelly loam; moderate medium subangular blocky structure; firm; common distinct clay films on faces of peds; common fine iron-manganese concretions; 15 percent chert gravel; slightly acid; clear wavy boundary.

2Bt4—32 to 44 inches; yellowish red (5YR 4/6) and dark red (2.5YR 3/6) very gravelly loam; moderate medium subangular blocky structure; firm; many prominent clay films on faces of peds; 30 percent chert gravel and 15 percent cobbles; moderately acid; clear smooth boundary.

3Bt5—44 to 53 inches; dark red (2.5YR 3/6) gravelly clay; strong medium angular blocky structure; firm; common distinct clay films on faces of peds; 20 percent chert gravel; strongly acid; gradual smooth boundary.

3Bt6—53 to 72 inches; red (2.5YR 4/8) and brownish yellow (10YR 6/6) gravelly clay; common fine and medium distinct strong brown (7.5YR 5/8) mottles; strong medium angular blocky structure; firm; common distinct clay films on faces of peds; common fine and medium strong brown (7.5YR 5/8) masses of iron accumulation; 20 percent chert gravel; strongly acid.

Range in Characteristics

Thickness of the ochric epipedon: 5 to 12 inches

Depth to the argillic horizon: 5 to 12 inches

Depth to the 2Bt horizon: 11 to 50 inches

Ap horizon:

Color—hue of 10YR and value and chroma of 3 or 4

Redoximorphic features—none

Texture of the fine-earth fraction—silt loam

Content of rock fragments—0 to 5 percent

Reaction—moderately acid to neutral (pH 5.6 to 7.3)

A horizon (if it occurs):

Color—hue of 7.5YR or 10YR and value and chroma of 3 or 4
 Redoximorphic features—none
 Texture of the fine-earth fraction—silt loam
 Content of rock fragments—0 to 10 percent
 Reaction—moderately acid to neutral (pH 5.6 to 7.3)

BA horizon (if it occurs):

Color—hue of 5YR, 7.5YR, or 10YR, value of 3 to 5, and chroma of 3 to 6
 Redoximorphic features—none
 Texture of the fine-earth fraction—silt loam
 Content of rock fragments—0 to 4 percent
 Reaction—slightly acid (pH 6.1 to 6.5)

Bt horizon:

Color—hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 3 to 6
 Redoximorphic features—none
 Texture of the fine-earth fraction—silt loam, silty clay loam, or clay loam
 Content of rock fragments—0 to 30 percent
 Reaction—moderately acid to neutral (pH 5.6 to 7.3)

2Bt horizon:

Color—hue of 2.5YR, 5YR, or 7.5YR, value of 3 to 6, and chroma of 4 to 6
 Texture of the fine-earth fraction—loam, silt loam, clay loam, or silty clay loam
 Content of rock fragments—15 to 50 percent
 Reaction—strongly acid to neutral (pH 5.1 to 7.3)

3Bt horizon:

Color—hue of 2.5YR to 7.5YR, value of 3 to 5, and chroma of 6 or 8
 Redoximorphic features—masses of iron accumulation
 Texture of the fine-earth fraction—clay
 Content of rock fragments—20 to 75 percent
 Reaction—very strongly acid to neutral (pH 4.5 to 7.3)

Quarles Series

Depth to bedrock: Very deep (more than 60 inches)

Drainage class: Poorly drained

Permeability: Slow

Landform: Stream terraces in river valleys

Parent material: Alluvium

Slope class: Nearly level (0 to 2 percent)

Elevation: 790 feet

Taxonomic classification: Fine, mixed, active, thermic Mollic Endoaqualfs

Typical Pedon

Quarles silt loam, 0 to 2 percent slopes, rarely flooded; 6,600 feet north and 1,600 feet east of the southwest corner of sec. 3, T. 34 N., R. 26 W.; in a pasture; USGS Stockton topographic quadrangle; UTM coordinates 4,175,470 meters Northing and 432,250 meters Easting:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, very dark grayish brown (10YR 3/2) crushed, brown (10YR 5/3) dry; weak fine granular structure; friable; many very fine and fine roots; many very fine and fine vesicular and tubular pores; common fine yellowish brown (10YR 5/6) masses of iron accumulation; strongly acid; clear smooth boundary.

Eg1—8 to 14 inches; dark grayish brown (10YR 4/2) silt loam; weak thin platy structure parting to weak very fine subangular blocky; friable; common fine roots; many very fine and fine vesicular and tubular pores; few yellowish brown (10YR 5/6) iron stains and common silt coats; common fine yellowish brown (10YR 5/6) masses of iron accumulation; strongly acid; gradual smooth boundary.

Eg2—14 to 20 inches; grayish brown (10YR 5/2) silt loam; weak thin platy structure parting to weak fine subangular blocky; friable; common fine roots; many very fine and fine vesicular and tubular pores; common very dark grayish brown (10YR 3/2) organic coats, few silt coats, and common distinct pressure faces; common fine yellowish brown (10YR 5/6) masses of iron accumulation; strongly acid; clear smooth boundary.

BEg—20 to 25 inches; dark gray (10YR 4/1) silt loam; weak fine and medium subangular blocky structure; firm; common very fine and fine roots; many very fine and fine vesicular and tubular pores; few dark grayish brown (10YR 4/2) clay films and common grayish brown (10YR 5/2) silt coats; common fine yellowish brown (10YR 5/6) masses of iron accumulation; strongly acid; clear smooth boundary.

Btg1—25 to 34 inches; dark gray (10YR 4/1) silty clay loam; weak fine and medium subangular blocky structure; firm; few very fine roots; common very fine and fine vesicular and tubular pores; common dark grayish brown (10YR 4/2) clay films and few grayish brown (10YR 5/2) silt coats; common fine yellowish brown (10YR 5/6) masses of iron

accumulation and common fine red (2.5YR 4/6) masses of iron accumulation; strongly acid; gradual smooth boundary.

Btg2—34 to 47 inches; grayish brown (10YR 5/2) silty clay loam; moderate fine and medium subangular blocky structure; firm; few very fine roots; common very fine and fine vesicular and tubular pores; common dark gray (10YR 4/1) clay films; many fine and medium yellowish brown (10YR 5/6) masses of iron accumulation, common fine and medium masses of iron-manganese accumulation, common fine iron-manganese concretions, and common fine light brownish gray (10YR 6/2) iron depletions; moderately acid; gradual smooth boundary.

Btg3—47 to 58 inches; light brownish gray (10YR 6/2) and yellowish brown (10YR 5/6) silty clay loam; weak fine subangular blocky structure; firm; few very fine roots; common very fine and fine vesicular and tubular pores; few dark grayish brown (10YR 4/2) clay films; common fine and medium masses of iron-manganese accumulation; moderately acid; gradual smooth boundary.

Btg4—58 to 80 inches; light brownish gray (10YR 6/2) and strong brown (7.5YR 5/6) silty clay loam; weak fine subangular blocky structure; firm; few very fine roots; common very fine and fine vesicular and tubular pores; few clay films; few fine masses of iron-manganese accumulation; moderately acid.

Range in Characteristics

Thickness of the ochric epipedon: 8 to 25 inches

Depth to the argillic horizon: 17 to 25 inches

Depth to the albic horizon: 8 to 10 inches

Ap horizon:

Color—hue of 10YR, value of 3, and chroma of 2
Redoximorphic features—masses of iron accumulation
Texture of the fine-earth fraction—silt loam
Content of rock fragments—none
Reaction—strongly acid to moderately acid (pH 5.1 to 6.0)

E horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 2
Redoximorphic features—masses of iron-manganese accumulation
Texture of the fine-earth fraction—silt loam
Content of rock fragments—none
Reaction—very strongly acid or strongly acid (pH 4.5 to 5.5)

Btg horizon:

Color—hue of 7.5YR, 10YR, or 2.5Y, value of 4 to 6, and chroma of 1 to 6
Redoximorphic features—masses of iron accumulation or masses of iron-manganese accumulation
Texture of the fine-earth fraction—silty clay loam or silty clay
Content of rock fragments—none
Reaction—very strongly acid to slightly acid (pH 4.5 to 6.5)

Racket Series

Depth to bedrock: Very deep (more than 60 inches)

Drainage class: Well drained

Permeability: Moderate

Landform: Flood plains in river valleys

Parent material: Loamy alluvium

Slope class: Nearly level and very gently sloping (0 to 3 percent)

Elevation: 905 feet

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Cumulic Hapludolls

Typical Pedon

Racket silt loam, 0 to 3 percent slopes, frequently flooded; 2,550 feet south and 100 feet east of the northwest corner of sec. 20, T. 34 N., R. 24 W.; in a pasture; USGS Fair Play topographic quadrangle; UTM coordinates 4,168,830 meters Northing and 447,720 meters Easting:

A1—0 to 10 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak fine granular structure; friable; 4 percent rounded chert gravel; slightly acid; clear smooth boundary.

A2—10 to 24 inches; dark brown (10YR 3/3) loam, brown (10YR 5/3) dry; moderate fine granular structure; friable; many fine roots; many distinct very dark grayish brown (10YR 3/2) organic coats; 8 percent rounded chert gravel; neutral; clear smooth boundary.

Bw—24 to 38 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak very fine subangular blocky structure; friable; common fine roots; 10 percent rounded chert gravel; neutral; clear smooth boundary.

2C1—38 to 51 inches; dark grayish brown (10YR 4/2) gravelly sandy loam; massive; very friable; few fine roots; few fine brown (10YR 4/3) masses of iron accumulation; 25 percent subrounded chert gravel; neutral; clear wavy boundary.

2C2—51 to 60 inches; brown (10YR 4/3) very gravelly sandy loam; massive; very friable; few fine roots; common distinct very dark grayish brown (10YR 3/2) organic coats; 40 percent subrounded chert gravel; neutral.

Range in Characteristics

Thickness of the mollic epipedon: 38 to more than 63 inches

A horizon:

Color—hue of 10YR and value and chroma of 2 or 3

Texture of the fine-earth fraction—silt loam or loam

Content of rock fragments—0 to 8 percent

Reaction—slightly acid or neutral (pH 6.1 to 7.3)

Bw horizon:

Color—hue of 10YR, value of 3, and chroma of 2

Texture of the fine-earth fraction—silt loam, loam, or silty clay loam

Content of rock fragments—0 to 10 percent

Reaction—slightly acid or neutral (pH 6.1 to 7.3)

2C horizon:

Color—hue of 10YR, value of 3 or 4, and chroma of 2 or 3

Texture of the fine-earth fraction—sandy loam, loamy sand, or sand

Content of rock fragments—25 to 65 percent

Reaction—slightly acid or neutral (pH 6.1 to 7.3)

Secesh Series

Depth to bedrock: Very deep (more than 60 inches)

Drainage class: Well drained

Permeability: Moderate

Landform: Flood-plain steps in river valleys

Parent material: Loamy alluvium over gravelly residuum derived from cherty limestone

Slope class: Nearly level (0 to 2 percent)

Elevation: 1,000 feet

Taxonomic classification: Fine-loamy, siliceous, active, mesic Ultic Hapludalfs

Typical Pedon

Secesh silt loam, 0 to 2 percent slopes, occasionally flooded; 1,600 feet north and 650 feet east of the southwest corner of sec. 36, T. 30 N., R. 26 W.; in a pasture; USGS South Greenfield topographic quadrangle; UTM coordinates 4,126,940 meters Northing and 433,460 meters Easting:

Ap—0 to 8 inches; brown (7.5YR 4/4) silt loam, brown (10YR 5/3) dry; weak medium platy structure parting to weak medium granular; friable; many fine roots; 5 percent chert gravel; slightly acid; clear smooth boundary.

BA—8 to 14 inches; brown (7.5YR 4/4) silt loam; weak fine subangular blocky structure; friable; many fine roots; 10 percent chert gravel; slightly acid; clear smooth boundary.

Bt1—14 to 24 inches; brown (7.5YR 4/4) loam; moderate fine subangular blocky structure; firm; common fine roots; common distinct clay films on faces of peds; 10 percent chert gravel; moderately acid; clear smooth boundary.

2Bt2—24 to 34 inches; strong brown (7.5YR 4/6) very gravelly clay loam; weak fine subangular blocky structure; firm; few fine roots; common distinct clay films on faces of peds; few masses of iron accumulation; 35 percent chert gravel and 10 percent chert cobbles; moderately acid; clear wavy boundary.

2Bt3—34 to 46 inches; brown (7.5YR 4/4) gravelly clay loam; strong fine and medium subangular blocky structure; firm; few fine roots; common distinct clay films on faces of peds; few masses of iron accumulation; 15 percent chert gravel; moderately acid; clear smooth boundary.

2Bt4—46 to 60 inches; brown (7.5YR 4/4) silty clay loam; moderate fine and medium subangular blocky structure; firm; few fine roots; common distinct clay films on faces of peds; few masses of iron accumulation; 5 percent chert gravel; moderately acid.

Range in Characteristics

Thickness of the ochric epipedon: 6 to 14 inches

Depth to the argillic horizon: 6 to 14 inches

Ap or A horizon:

Color—hue of 7.5YR, value of 3 or 4, and chroma of 2 to 4

Texture of the fine-earth fraction—silt loam

Content of rock fragments—0 to 5 percent

Reaction—moderately acid or slightly acid (pH 5.6 to 6.5)

BA horizon:

Color—hue of 7.5YR and value and chroma of 4

Texture of the fine-earth fraction—silt loam or silty clay loam

Content of rock fragments—10 percent

Reaction—strongly acid to slightly acid (pH 5.1 to 6.5)

Bt horizon:

Color—hue of 7.5YR, value of 4 or 5, and chroma of 4 to 6

Texture of the fine-earth fraction—silty clay loam, loam, or silt loam

Content of rock fragments—0 to 20 percent

Reaction—strongly acid or moderately acid (pH 5.1 to 6.0)

2Bt horizon:

Color—hue of 7.5YR, value of 4, and chroma of 4 to 6

Texture of the fine-earth fraction—clay loam or silty clay loam

Content of rock fragments—5 to 45 percent

Reaction—strongly acid or moderately acid (pH 5.1 to 6.0)

Sonsac Series

Depth to bedrock: Moderately deep (20 to 40 inches)

Drainage class: Well drained

Permeability: Moderate

Landform: Hills on uplands

Position on the landform: Backslopes

Parent material: Gravelly colluvium over clayey residuum derived from cherty limestone

Slope class: Moderately sloping to steep (3 to 35 percent)

Elevation: 970 feet

Taxonomic classification: Clayey-skeletal, mixed, active, mesic Typic Hapludalfs

Typical Pedon

Sonsac very cobbly silt loam, in an area of Sonsac-Moko-Rock outcrop complex, 3 to 15 percent slopes; 1,900 feet west and 2,000 feet north of the southeast corner of sec. 17, T. 32 N., R. 26 W.; in a pasture; USGS Crisp topographic quadrangle; UTM coordinates 4,151,600 meters Northing and 428,060 meters Easting:

A—0 to 3 inches; very dark grayish brown (10YR 3/2) very cobbly silt loam, grayish brown (10YR 5/2) dry; moderate fine granular structure; very friable; many fine roots; moderately alkaline; 10 percent gravel, 35 percent cobbles, and 5 percent stones; abrupt smooth boundary.

BA—3 to 6 inches; strong brown (7.5YR 4/6) and very dark grayish brown (10YR 3/2) very cobbly silt loam, light brown (7.5YR 6/3) and grayish brown (10YR 5/2) dry; moderate fine granular structure; friable; many fine roots; neutral; 15 percent gravel,

35 percent cobbles, and 5 percent stones; abrupt smooth boundary.

Bt1—6 to 9 inches; brown (10YR 4/3) very cobbly silty clay loam; weak fine subangular blocky structure; friable; common fine roots; common faint clay films on faces of peds; slightly acid; 10 percent gravel, 40 percent cobbles, and 5 percent stones; clear smooth boundary.

2Bt2—9 to 15 inches; reddish brown (5YR 4/4) extremely cobbly clay; moderate fine subangular blocky structure; firm; common fine roots; common distinct clay films on faces of peds; slightly acid; 15 percent gravel, 45 percent cobbles, and 5 percent stones; clear wavy boundary.

2Bt3—15 to 21 inches; dark red (2.5YR 3/6) very cobbly clay; moderate fine angular blocky structure; firm; few fine roots; many distinct clay films on faces of peds; few fine masses of iron accumulation; slightly acid; 5 percent gravel, 45 percent cobbles, and 5 percent stones; gradual wavy boundary.

2Bt4—21 to 31 inches; yellowish red (5YR 4/6) very cobbly clay; moderate fine and medium angular blocky structure; firm; few very fine roots; common distinct clay films on faces of peds; few fine masses of iron accumulation; neutral; 10 percent gravel, 30 percent cobbles, and 5 percent stones; clear wavy boundary.

2R—31 to 80 inches; limestone.

Range in Characteristics

Thickness of the ochric epipedon: 5 to 13 inches

Depth to the argillic horizon: 5 to 13 inches

Depth to the 2Bt horizon: 8 to 22 inches

Depth to lithic contact: 20 to 40 inches

A horizon:

Color—hue of 10YR, value of 3 or 4, and chroma of 2 or 3

Texture of the fine-earth fraction—silt loam

Content of rock fragments—15 to 55 percent

Reaction—strongly acid to slightly acid (pH 5.1 to 6.5)

BA horizon:

Color—hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 to 6

Texture of the fine-earth fraction—silt loam

Content of rock fragments—35 to 70 percent

Reaction—strongly acid to slightly acid (pH 5.1 to 6.5)

BE horizon (if it occurs):

Color—hue of 10YR and value and chroma of 6

Texture of the fine-earth fraction—silt loam
 Content of rock fragments—40 percent
 Reaction—moderately acid (pH 5.6 to 6.0)

Bt horizon:

Color—hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 3 to 6
 Texture of the fine-earth fraction—silt loam or silty clay loam
 Content of rock fragments—40 to 65 percent
 Reaction—strongly acid to slightly acid (pH 5.1 to 6.5)

2Bt horizon:

Color—hue of 2.5YR, 5YR, or 7.5YR, value of 3 or 4, and chroma of 4 to 6
 Texture of the fine-earth fraction—silty clay or clay
 Content of rock fragments—20 to 55 percent
 Reaction—strongly acid to neutral (pH 5.1 to 7.3)

Sturkie Series

Depth to root-restricting feature: Very deep (more than 60 inches)

Drainage class: Well drained

Permeability: Moderate

Landform: Flood plains in river valleys

Parent material: Silty alluvium

Slope class: Nearly level (0 to 2 percent)

Elevation: 915 feet

Taxonomic classification: Fine-silty, mixed, superactive, mesic Cumulic Hapludolls

Typical Pedon

Sturkie silt loam, 0 to 2 percent slopes, frequently flooded (fig. 17); 700 feet west and 150 feet south of the northeast corner of sec. 4, T. 34 N., R. 21 W.; in a pasture; USGS Buffalo Northwest topographic quadrangle; lat. 37 degrees 43 minutes 08 seconds N. and long. 93 degrees 13 minutes 34 seconds W.; UTM coordinates 4,174,500 meters Northing and 479,630 meters Easting:

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak fine granular structure; friable; many very fine roots; neutral; clear smooth boundary.

A—9 to 19 inches; very dark grayish brown (10YR 3/2) silt loam, brown (10YR 5/3) dry; moderate very fine granular structure; friable; common very fine roots; neutral; clear smooth boundary.

Bw1—19 to 30 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate very fine subangular blocky structure;



Figure 17.—Profile of Sturkie silt loam, 0 to 2 percent slopes, frequently flooded. Depth is marked in centimeters.

friable; common very fine roots; neutral; clear smooth boundary.

Bw2—30 to 60 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak fine subangular blocky structure; very friable; few very fine roots; neutral.

Range in Characteristics

Thickness of the mollic epipedon: 60 to 80 inches

Ap and A horizons:

Color—hue of 7.5YR or 10YR, value of 3, and chroma of 2 or 3

Texture of the fine-earth fraction—silt loam

Content of rock fragments—0 to 1 percent

Reaction—moderately acid to neutral (pH 5.6 to 7.3)

Bw horizon:

Color—hue of 10YR, value of 3, and chroma of 2 or 3

Texture of the fine-earth fraction—silt loam or silty clay loam

Content of rock fragments—0 to 2 percent

Reaction—moderately acid to neutral (pH 5.6 to 7.3)

C horizon (if it occurs):

Color—hue of 10YR, value of 3 or 4, and chroma of 1 to 3

Texture of the fine-earth fraction—silt loam or silty clay loam

Reaction—slightly acid to slightly alkaline (pH 6.1 to 7.8)

Sylvania Series

Depth to bedrock: Deep (40 to 60 inches)

Drainage class: Moderately well drained

Permeability: Moderately slow

Landform: Hills and ridges on uplands

Position on the landform: Backslopes, shoulders, and summits

Parent material: Colluvium over clayey residuum derived from sandstone and shale

Slope class: Gently sloping to strongly sloping (2 to 15 percent)

Elevation: 1,035 feet

Taxonomic classification: Fine, mixed, active, thermic Oxyaquic Haplohumults

Typical Pedon

Sylvania loam, 5 to 15 percent slopes, very stony (fig. 18); 1,900 feet west and 2,900 feet north of the southeast corner of sec. 18, T. 32 N., R. 28 W.; in a pasture; USGS Cedarville topographic quadrangle; UTM coordinates 4,152,160 meters Northing and 417,070 meters Easting:

Ap—0 to 6 inches; very dark grayish brown (10YR 3/2) loam, brown (10YR 5/3) dry; weak fine granular structure; friable; common medium roots; 10 percent sandstone gravel and 3 percent sandstone cobbles; very strongly acid; abrupt smooth boundary.

A—6 to 11 inches; dark brown (10YR 3/3) gravelly loam, brown (10YR 5/3) dry; weak fine granular structure; friable; common medium roots; 15 percent sandstone gravel and 5 percent sandstone cobbles; very strongly acid; clear smooth boundary.

BA—11 to 15 inches; brown (7.5YR 4/4) very gravelly



Figure 18.—Profile of Sylvania loam. Depth is marked in centimeters.

sandy clay loam; weak fine subangular blocky structure parting to weak fine granular; friable; common fine roots; 45 percent sandstone gravel and 5 percent sandstone cobbles; strongly acid; abrupt wavy boundary.

2Bt1—15 to 24 inches; red (2.5YR 4/6) and dark reddish brown (2.5YR 3/4) clay; weak fine subangular blocky structure; firm; common very fine roots; common distinct continuous clay films on faces of pedis; few fine weak red (10R 4/4) masses of iron accumulation and common fine yellowish brown (10YR 5/6) masses of iron accumulation; 5 percent sandstone channers; very strongly acid; gradual smooth boundary.

2Bt2—24 to 30 inches; brownish yellow (10YR 6/6)

clay; moderate fine subangular blocky structure; firm; common very fine roots; common distinct continuous clay films on faces of peds; common fine red (10R 4/6) masses of iron accumulation; very strongly acid; gradual smooth boundary.

2Bt3—30 to 40 inches; light yellowish brown (10YR 6/4) clay; weak fine subangular blocky structure; firm; common very fine roots; common distinct continuous clay films on faces of peds; many fine dark red (2.5YR 3/6) masses of iron accumulation and common fine strong brown (7.5YR 5/6) masses of iron accumulation; very strongly acid; gradual smooth boundary.

2Bt4—40 to 45 inches; light brownish gray (10YR 6/2) silty clay; weak thin platy structure parting to weak very fine and fine subangular blocky; firm; common distinct continuous clay films on faces of peds; common fine brownish yellow (10YR 6/8) masses of iron accumulation and common fine red (2.5YR 4/8) masses of iron accumulation; very strongly acid; clear smooth boundary.

2Cr—45 to 55 inches; shale.

Range in Characteristics

Thickness of the umbric epipedon: 10 to 19 inches

Depth to the argillic horizon: 11 to 19 inches

Depth to the 2Bt horizon: 15 to 19 inches

Depth to paralithic contact: 40 to 51 inches

Ap horizon:

Color—hue of 10YR, value of 3, and chroma of 2

Redoximorphic features—none

Texture of the fine-earth fraction—loam

Content of rock fragments—10 to 13 percent

Reaction—very strongly acid or strongly acid (pH 4.5 to 5.5)

A horizon:

Color—hue of 10YR, value of 2 or 3, and chroma of 1 to 3

Redoximorphic features—none

Texture of the fine-earth fraction—loam or clay loam

Content of rock fragments—0 to 20 percent

Reaction—very strongly acid or strongly acid (pH 4.5 to 5.5)

BA horizon:

Color—hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 to 6

Redoximorphic features—none

Texture of the fine-earth fraction—loam, sandy clay loam, or clay loam

Content of rock fragments—5 to 50 percent

Reaction—very strongly acid or strongly acid (pH 4.5 to 5.5)

Bt horizon (if it occurs):

Color—hue of 5YR to 10YR, value of 4 or 5, and chroma of 3 to 6

Redoximorphic features—iron depletions, masses of iron accumulation, or masses of iron-manganese accumulation

Texture of the fine-earth fraction—clay loam, loam, or clay

Content of rock fragments—0 to 10 percent

Reaction—very strongly acid or strongly acid (pH 4.5 to 5.5)

2Bt horizon:

Color—hue of 2.5YR, 7.5YR, or 10YR, value of 3 to 6, and chroma of 2 to 6

Redoximorphic features—iron concretions or masses of iron accumulation

Texture of the fine-earth fraction—loam, clay loam, silty clay, or clay

Content of rock fragments—0 to 45 percent

Reaction—very strongly acid or strongly acid (pH 4.5 to 5.5)

2BC horizon (if it occurs):

Color—hue of 10YR, value of 5, and chroma of 3 to 6

Redoximorphic features—iron depletions or masses of iron accumulation

Texture of the fine-earth fraction—loam, silty clay, or silty clay loam

Content of rock fragments—5 to 35 percent

Reaction—very strongly acid or strongly acid (pH 4.5 to 5.5)

Viraton Series

Depth to bedrock: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Permeability: Moderate above the fragipan; very slow in the fragipan

Landform: Ridges on uplands

Position on the landform: Summits

Parent material: Fine-loamy colluvium over gravelly colluvium over clayey residuum derived from cherty limestone

Slope class: Gently sloping (2 to 5 percent)

Elevation: 1,175 feet

Taxonomic classification: Fine-loamy, siliceous, active, mesic Oxyaquic Fragiudalfs

Typical Pedon

Viraton silt loam, 2 to 5 percent slopes; 2,300 feet north and 300 feet east of the southwest corner of sec. 31, T. 30 N., R. 26 W.; in a pasture; USGS South Greenfield topographic quadrangle; UTM coordinates

4,127,470 meters Northing and 425,180 meters Easting:

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam; strong fine granular structure; very friable; many fine roots; slightly acid; clear smooth boundary.

BE—6 to 11 inches; yellowish brown (10YR 5/4) silt loam; moderate fine subangular blocky structure; very friable; common fine roots; neutral; gradual wavy boundary.

Bt—11 to 21 inches; dark yellowish brown (10YR 4/4) gravelly silty clay loam; moderate fine subangular blocky structure; friable; common fine roots; few distinct clay films on faces of peds; 15 percent chert gravel; strongly acid; abrupt wavy boundary.

2Btx—21 to 30 inches; grayish brown (10YR 5/2) and strong brown (7.5YR 5/6) very gravelly silty clay loam; strong very coarse prismatic structure parting to weak thin platy; very firm, brittle; many very fine and fine roots in mat at top of horizon and few fine roots in cracks; few distinct clay films on faces of peds; common fine dark red (2.5YR 3/6) masses of iron accumulation; 30 percent chert gravel and 10 percent chert cobbles; strongly acid; abrupt wavy boundary.

3Bt1—30 to 39 inches; dark red (2.5YR 3/6) gravelly clay; strong fine angular blocky structure; firm; common distinct clay films on faces of peds; common fine brown (7.5YR 5/3) and reddish yellow (7.5YR 6/6) masses of iron accumulation; 15 percent chert gravel; moderately acid; gradual wavy boundary.

3Bt2—39 to 60 inches; dark red (2.5YR 3/6) gravelly clay; strong fine angular blocky structure; firm; common distinct clay films on faces of peds; common fine brown (7.5YR 5/4) and strong brown (7.5YR 5/6) masses of iron accumulation; 15 percent chert gravel; moderately acid.

Range in Characteristics

Thickness of the ochric epipedon: 6 to 12 inches

Depth to the argillic horizon: 6 to 12 inches

Depth to the fragipan: 18 to 30 inches

Ap horizon:

Color—hue of 10YR, value of 3 to 5, and chroma of 3

Redoximorphic features—none

Texture of the fine-earth fraction—silt loam

Content of rock fragments—0 to 5 percent

Reaction—very strongly acid to neutral (pH 4.5 to 7.3)

BE horizon:

Color—hue of 10YR, value of 5, and chroma of 4

Redoximorphic features—none

Texture of the fine-earth fraction—silt loam

Content of rock fragments—none

Reaction—very strongly acid to moderately acid (pH 4.5 to 6.0)

Bt horizon:

Color—hue of 5YR, 7.5YR, or 10YR, value of 4 or 5, and chroma of 4 to 6

Redoximorphic features—none

Texture of the fine-earth fraction—silty clay loam or silt loam

Content of rock fragments—0 to 25 percent

Reaction—very strongly acid to moderately acid (pH 4.5 to 6.0)

2Btx horizon:

Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 to 6

Redoximorphic features—masses of iron accumulation

Texture of the fine-earth fraction—silty clay loam or silt loam

Content of rock fragments—40 to 55 percent

Reaction—extremely acid to strongly acid (pH 3.5 to 5.5)

3Bt horizon:

Color—hue of 2.5YR or 7.5YR, value of 3 to 5, and chroma of 6

Redoximorphic features—masses of iron accumulation

Texture of the fine-earth fraction—clay, silty clay, or silty clay loam

Content of rock fragments—15 to 70 percent

Reaction—very strongly acid to neutral (pH 4.5 to 7.3)

Wanda Series

Depth to bedrock: Very deep (more than 60 inches)

Drainage class: Well drained

Permeability: Moderate

Landform: Paleoterraces in river valleys

Position on the landform: Footslopes

Parent material: Loess over gravelly colluvium

Slope class: Gently sloping (2 to 5 percent)

Elevation: 1,080 feet

Taxonomic classification: Fine-loamy, mixed, active, mesic Typic Paleudolls

Typical Pedon

Wanda silt loam, 2 to 5 percent slopes; 200 feet west and 1,100 feet south of the northeast corner of sec. 20, T. 30 N., R. 26 W.; in an area of cropland; USGS

South Greenfield topographic quadrangle; UTM coordinates 4,131,200 meters Northing and 428,390 meters Easting:

- Ap—0 to 9 inches; very dark brown (10YR 2/2) silt loam, grayish brown (10YR 5/2) dry; weak fine granular structure; friable; common very fine and fine roots; 4 percent chert gravel; moderately acid; clear smooth boundary.
- A—9 to 15 inches; dark brown (10YR 3/3) silt loam, brown (10YR 5/3) dry; moderate very fine subangular blocky structure; friable; few very fine roots; slightly acid; clear smooth boundary.
- Bt1—15 to 21 inches; brown (7.5YR 4/4) silty clay loam; weak very fine and fine subangular blocky structure; firm; few very fine roots; many distinct clay films on faces of peds and common organic coats in root channels and/or pores; common fine iron-manganese concretions; 5 percent chert gravel; slightly acid; clear smooth boundary.
- Bt2—21 to 26 inches; dark reddish brown (5YR 3/4) and brown (7.5YR 4/4) silty clay loam; moderate fine subangular blocky structure; firm; few very fine roots; many distinct clay films on faces of peds and common organic coats in root channels and/or pores; common fine iron-manganese concretions; 5 percent chert gravel; slightly acid; clear smooth boundary.
- 2Bt3—26 to 33 inches; dark reddish brown (2.5YR 3/4) silty clay loam; moderate fine subangular blocky structure; firm; few very fine roots; many distinct clay films on faces of peds; common fine iron-manganese concretions; 10 percent chert gravel; slightly acid; abrupt smooth boundary.
- 2Bt4—33 to 44 inches; dark reddish brown (2.5YR 3/4) and red (2.5YR 4/6) silty clay loam; moderate fine subangular blocky structure; firm; many distinct clay films on faces of peds; common fine iron-manganese concretions; 10 percent chert gravel; moderately acid; gradual smooth boundary.
- 2Bt5—44 to 60 inches; dark red (2.5YR 3/6) and brown (7.5YR 4/4) gravelly silty clay loam; moderate medium subangular blocky structure; firm; many distinct clay films on faces of peds; few

fine iron-manganese concretions; 15 percent chert gravel; moderately acid.

Range in Characteristics

Thickness of the mollic epipedon: 11 to 16 inches

Depth to the argillic horizon: 11 to 16 inches

Depth to the 2Bt horizon: 22 to 61 inches

Ap horizon:

Color—hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 2

Texture of the fine-earth fraction—silt loam

Content of rock fragments—0 to 12 percent

Reaction—moderately acid to neutral (pH 5.6 to 7.3)

A horizon:

Color—hue of 10YR, value of 3, and chroma of 2 or 3

Texture of the fine-earth fraction—silt loam

Content of rock fragments—0 to 5 percent

Reaction—moderately acid to neutral (pH 5.6 to 7.3)

AB horizon (if it occurs):

Color—hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 to 4

Texture of the fine-earth fraction—silt loam or silty clay loam

Content of rock fragments—0 to 15 percent

Reaction—neutral (pH 6.6 to 7.3)

Bt horizon:

Color—hue of 2.5YR, 5YR, 7.5YR, or 10YR, value of 3 or 4, and chroma of 2 to 6

Texture of the fine-earth fraction—silty clay loam

Content of rock fragments—0 to 20 percent

Reaction—strongly acid to slightly acid (pH 5.1 to 6.5)

2Bt horizon:

Color—hue of 10R, 2.5YR, 5YR, or 7.5YR, value of 3 or 4, and chroma of 4 to 6

Texture of the fine-earth fraction—silty clay loam or silty clay

Content of rock fragments—15 to 55 percent

Reaction—strongly acid to slightly acid (pH 5.1 to 6.5)

Formation of the Soils

This section relates the soils in the survey area to the major factors of soil formation. It also describes the geology, physiography, and hydrology of the survey area.

Factors of Soil Formation

Soil is the product of soil-forming processes acting on accumulated or deposited geologic material. The characteristics of the soil are determined by the type of parent material; the plant and animal life on and in the soil; the climate under which the soil-forming factors were active; topography, or lay of the land; and the length of time these forces have been active.

The parent material affects the kind of soil profile that is formed and in extreme cases determines it almost entirely. Plant and animal life are the active factors of soil formation. The climate determines the amount of water available for leaching and the amount of heat for physical and chemical changes. Together, climate and plant and animal life act on the parent material and slowly change it to a natural body that has genetically related horizons. Topography commonly modifies these other factors. Finally, time is required for changes in the parent material to result in the formation of a soil. Generally, a long time is required for the development of distinct soil horizons.

These factors of soil formation are all so closely interrelated in their effects on the soil that few generalizations can be made about the effect of any one factor unless conditions are specified for the others. Soil formation is complex, and many processes of soil development are still unknown.

Parent Material

Parent material is the unconsolidated mass from which soil is formed. The formation or deposition of this material is the first step in the development of a soil profile. The characteristics of the parent material determine the chemical and mineralogical composition of the soil. In Cedar County, three kinds of parent material, alone or in combinations, have contributed to the formation of the soils. These three kinds of parent material are residuum, or material weathered from

bedrock; loess, or wind-deposited material; and alluvium, or water-deposited material.

In Cedar County, most of the material weathered from dolostone bedrock is of Ordovician age. This material tends to weather to clay containing varying amounts of chert. Ocie and Gatewood soils are examples of soils that formed in dolomitic material.

Limestone bedrock tends to form a very deep, cherty, red clay soil. Bona and Goss soils formed mostly in Mississippian-age limestone material. Shale bedrock from the Northview Formation, also from the Mississippian age, typically weathers into a greenish clay material. Alsup soils formed in Northview shale.

The sandstone bedrock and interbedded sandstone and shale from the Pennsylvanian age weather to clay loam or other loamy material. Collinsville and Bolivar soils formed in sandstone bedrock (fig. 19). Sylvania and Cliquot soils formed in interbedded sandstone and shale.

Alluvium is material that was transported by water and deposited on flood plains and terraces in stream valleys. Because of the various origins and differing velocities of flowing water, this material varies greatly in texture and mineralogical composition. The source of the parent material on the flood plains along small tributary streams is limited to local uplands. Racket and Sturkie soils formed in alluvial material.

Loess is a silty material transported by the wind. None of the soils in Cedar County formed solely in this material. Its influence is evident, however, on broad ridgecrests. Barden, Crelton, and Viraton soils show this influence.

Living Organisms

Plants and animals living on or in the soil are active in the soil-forming process. Plants furnish organic material to the soil and bring up plant nutrients from underlying layers to the surface layer. As plants die and decay, they contribute organic matter to the soil. Bacteria and fungi decompose the plant remains and help to incorporate the organic matter into the soil.

The kind of native vegetation has greatly influenced soil formation in Cedar County. The basic kinds of native vegetation were prairie grasses and forest



Figure 19.—Outcroppings of sandstone in an area of Collinsville-Rock outcrop complex, 3 to 15 percent slopes.

vegetation. Additions of organic matter to soils that formed under prairie grasses are largely a result of the yearly decomposition of plant materials. Plant tops decompose at the surface, and the roots decompose at various depths in the soil. As a result, soils that formed under prairie grasses have a thick, dark surface layer. Bona and Wanda soils formed under grassland vegetation.

Additions of organic matter to soils that formed under forest vegetation are mostly the result of leaves and twigs that decompose on the surface. These soils have a thin, dark surface layer. Bolivar and Goss soils formed under this plant cover. Many of the soils in

Cedar County, however, formed under mixed grass and forest vegetation. Barden, Crelton, and Hoberg soils are examples of transition soils.

Insects, worms, humans, and other animals affect soil formation. Bacteria and fungi promote the decay of organic material, fix nitrogen, and improve tilth. Burrowing animals and insects loosen and mix various soil horizons.

In a relatively short time, human activities have greatly affected the processes of soil formation. The major alterations include changes in the type of vegetation, drainage of wet areas, and accelerated erosion. Row crops have replaced native grasses and

many of the forested areas. Nearly all of the flood plains and much of the upland areas are now farmed. These changes have increased food production but have had an adverse effect in terms of sustained productivity. Accelerated erosion continues to reduce the potential of many upland soils, and the loss of cropland to urban development is virtually irreversible.

Climate

Climate has been and still is an important factor of soil formation. Geologic erosion, plant and animal life, and, in more recent times, accelerated erosion all have varied with the climate.

High temperatures and adequate rainfall encourage rapid chemical and physical changes. When calcium carbonate and other soluble salts are removed by leaching, soil fertility declines. This type of climate is conducive to the breakdown of minerals and the relocation of clay within the soil. The clay is moved downward into the soil profile, and this downward movement results in the formation of the subsoil. Nearly all of the upland soils in the county, such as Bona and Goss soils, show evidence of this illuviation. Some evidence suggests that changes in climate have occurred over geologic time. Geologic erosion, stone lines, and loess deposition indicate climatic conditions different from those prevalent today.

Topography

Topography, or relief, affects soil formation through its influence on drainage, runoff, the rate of water infiltration, and geologic erosion. Topography is characterized by the length, shape, aspect, and degree of slope. It is important in determining the pattern and distribution of soils.

The amount of water entering the soil depends on slope, permeability, and the intensity of rainfall. Because runoff is rapid in steep areas, very little water passes through the soil and soil formation is slow. Geologic erosion almost keeps pace with the soil-forming processes. In gently sloping areas, runoff is slow, erosion is minimal, and most of the water passes through the soil. Leaching, the translocation of clay, and other soil-forming processes are intensified in these areas. Soils in these areas generally show maximum profile development.

Soils on steep, south-facing slopes receive more direct sunlight and are drier than similar soils on north-facing slopes. Drier conditions influence soil formation by affecting the kind of vegetation, the susceptibility to erosion, and the cycles of freezing and thawing.

Time

The degree of profile development is dependent on the length of time that the parent material has been in place and subject to the soil-forming processes. Older soils show the effects of leaching and clay movement and have developed distinct horizons. Young soils show little profile development. The soils in Cedar County vary in age. Soils that formed in recent alluvial deposits, such as Racket and Sturkie soils, are among the youngest. Some of the older soils have a greater number of profile features. The clay has been concentrated in a distinct subsoil through weathering and through translocation caused by percolating water. Soils that have a fragipan, such as Viraton soils, are among the most developed soils in the survey area.

Geology, Physiography, and Hydrology

Nearly all of Cedar County is in the Springfield Plateau section of the Ozarks Physiographic Province. The western part of the county is in the area of transition to the Osage Plains Physiographic Province. The landscape varies in response to the underlying bedrock formations. The mounds and prairies in the western and southern parts of the county are commonly capped by resistant sandstones and/or cherty limestones. The slopes below the caps typically developed on less resistant shales.

Bedrock in the county consists of sedimentary rocks ranging from Ordovician-age Jefferson City dolostone to sandstones, shales, and conglomerates of Pennsylvanian age.

Several geologically old and inactive faults pass through Cedar County. One of the most prominent is the Eldorado Springs fault, which trends in a east-northwest direction across northwestern Cedar County. Several small faults and folds are parallel to the structure. These faults are geologically old and inactive and are not considered a seismic risk.

Because of the effects of weathering, the bedrock surface is quite uneven. Depth to the top of the bedrock ranges from less than a foot in glades and on rocky slopes to over 50 feet in areas where bedrock weathering has been severe. In Cedar County, cherty dolostone, cherty limestone, sandstone, and shale play a significant part in the development of soils. On most of the uplands in the southern and eastern parts of the county, the bedrock is covered by a thick mantle of cherty residuum. Physical and chemical weathering caused a slow disintegration of the bedrock until it was

reduced to its least soluble components—that is, chert and clay. Weathering has altered the soluble carbonate portion of the limestone and dolomite into a brown to red clay, but chert in the bedrock consists of crystalline silica, which is more resistant to weathering. The chert remains behind in the form of fragments or wavy horizontal beds sandwiched between layers of clay. Where there has not been significant movement of soil through downslope creep or vertically through the slumping of bedrock, the sequence of clay and chert retains a relict structure of the original unweathered bedrock. The clay and chert that remain after bedrock disintegration are called bedrock residuum. The thickness of the bedrock varies according to the extent of erosion and weathering.

Precambrian granites and gneiss are 1,500 to 1,800 feet below the surface.

From the oldest to the youngest, geologic formations that crop out in Cedar County are the Jefferson City-Cotter Dolomite, the Compton Formation, the Northview-Sedalia Formation, the Pierson Formation, the Burlington-Keokuk Formation, the Warsaw Formation, Pennsylvanian-age sandstone/conglomerates, the Riverton Formation, and several Cherokee Group formations of Pennsylvanian age.

Jefferson City dolomite is 100 to 250 feet thick. It consists of light gray to yellow to brown, fine grained dolomite and some sandstone and chert beds. The Jefferson City-Cotter Dolomite is exposed in three areas: along the Sac River north of Stockton Lake, in the northeast corner of the county, and along the Eldorado Springs Fault east of Eldorado Springs.

The Compton Formation, which consists of bedded bluish gray to gray to light brown, fine grained limestone, is 5 to 15 feet thick. The main exposures are along Bear Creek, along the Sac River north of Stockton Lake, and along the Eldorado Springs Fault.

The Northview-Sedalia Formation consists of interfingerings of the two individual members. The variation in lateral thickness indicates a facies change; thus, the two formations have been mapped as one. The Sedalia member of the Northview-Sedalia Formation ranges from 0 to 50 feet in thickness. It is bluish gray to grayish brown to yellowish brown, fine grained dolomitic limestone. The Northview member ranges from 0 to 60 feet in thickness. It can be divided into two units. The lower unit is bluish gray to grayish green shale. The upper unit is brown to yellowish brown siltstone with a few interbedded layers of shale. It can be identified by numerous wormlike holes and cauda-galli (rooster tails) cast on the stone surface. The shale can be easily identified by its greenish color

and sticky clay texture. The very slow permeability in the shale retards the downward percolation of ground water. The water moves laterally along the top of the shale and commonly resurfaces as a spring on a valley slope or in a gully that intersects the shale. The main exposures are along the edge of Stockton Lake, along both sides of the Stockton Fault, and along the Eldorado Springs Fault east of Eldorado Springs.

The Pierson Formation is 10 to 15 feet thick. It is gray to yellowish brown to reddish brown, fine grained dolomitic limestone. In most areas this formation is nearly indistinguishable from the Burlington-Keokuk Formation. The main exposures of the Pierson Formation are along the edge of Stockton Lake, along Bear Creek and the Sac River below Stockton Lake, and along the Eldorado Springs Fault east of Eldorado Springs.

Because the boundary between the Burlington and Keokuk Formations is obscure, these two formations have been combined as a single unit. The Burlington-Keokuk Formation is one of the major surface rocks of Cedar County. It occurs mainly in the center of the county. The Burlington-Keokuk Formation is light gray to light bluish gray, medium to coarse, crystalline limestone. It averages about 100 to 120 feet in thickness. It is thin to massive, bedded limestone that has discontinuous bands of chert and chert nodules. In the eastern part of the county, a number of sinkholes occur in the Burlington-Keokuk Formation. The infiltration of surface water through stony residuum, cracks, and fractures in the bedrock has slowly dissolved the calcium in the limestone. As a result, a network of underground openings has formed. Sinkholes are formed when the ceiling of an underground opening begins to “stope,” or enlarge in an upward direction. The soil and rock forming the ceiling of the underground opening continue to collapse until the roof becomes so weak that there is a complete collapse reaching the surface.

Many of the glade areas on uplands in eastern Cedar County are in the Burlington-Keokuk Formation.

The Warsaw Formation is a very fossiliferous, medium or coarse, crystalline limestone. It is 60 to 100 feet thick. The most prominent exposures are in two quarries along Missouri Highway B northwest of Jerico Springs.

The Pennsylvanian-age sandstone and conglomerates are an unassigned bedrock unit that rests unconformably on Mississippian rocks primarily in the eastern part of the county. This unit ranges from less than 10 feet to 90 feet in thickness. It consists of red to brown, fine to coarse grained sandstone and cobble conglomerates with a sandstone matrix. Some

red to black shales also occur in the unit. The formation is poorly cemented, and in many places gravel and sand are the only evidence of its occurrence. The unit is in an area running north and south, east of Stockton Lake.

The Pennsylvanian-age Riverton Formation consists of dark brown to dark gray, fine grained shale with some thin coal beds. The best exposure is along the west valley wall of Cedar Creek in sec. 10, T. 35 N., R. 27 W., and on the south side of Missouri Highway U east of the bridge over Alder Creek.

The Pennsylvanian-age Warner Formation is light gray to red, micaceous sandstone. It commonly contains a conglomerate at its base. It is exposed on the north side of Missouri Highway U east of the bridge over Alder Creek.

The Rowe Formation consists of alternating layers of sandstones, siltstones, shales, coals, and underclays. Much of the past coal mining activity in southwestern Cedar County is associated with the Rowe coal bed. The best exposure of this formation is on the east side of Missouri Highway 39 south of Cedar Springs. The total thickness of the formation is between 10 and 25 feet.

The Drywood Formation consists of alternating layers of sandstones, siltstones, shales, coals, and underclays. The best exposure is on the east side of Missouri Highway 39 south of Cedar Springs. The

total thickness of the formation is between 10 and 25 feet.

The Bluejacket Formation consists of medium or fine grained, brown to tan sandstones and conglomerates. The best exposure is along Missouri Highway 39 south of Cedar Springs.

All bedrock units below the Pennsylvanian will yield water to some degree. The Burlington-Keokuk and Pierson Formations produce 1 to 10 gallons per minute in shallow wells. The Northview Formation is a silty shale that acts as an aquitard. As such, it retards the downward percolation of water. The silty shale does not produce any ground water, but numerous springs are along the top of the shale. The Compton, Cotter, and Jefferson City Formations provide small quantities of water for homes and farms but are not major sources of ground water. The quality of the water has deteriorated, however, because of contamination from the surface and poorly constructed and cased wells. The major high-yielding source of ground water in the county is the dolomites in the lower Ordovician-Cambrian Formations. Several cities obtain water from wells in these formations. Wells drilled for private water supplies are typically 150 to 400 feet deep and yield 10 to 25 gallons per minute. Wells drilled for public water supplies are generally 500 to 1,000 feet deep and yield up to 500 gallons per minute.

References

- Abbott, C., and L.B. Hoff. 1971. Missouri history in Cedar County.
- American Association of State Highway and Transportation Officials (AASHTO). 2000. Standard specifications for transportation materials and methods of sampling and testing. 20th edition, 2 volumes.
- American Society for Testing and Materials (ASTM). 2001. Standard classification of soils for engineering purposes. ASTM Standard D 2487–00.
- Bicknese, Nina A. 1989. Missouri natural features inventory of Cedar and Dade Counties. Missouri Department of Conservation.
- Brandle, J.R., D.L. Hintz, and J.W. Sturrock, editors. 1988. Windbreak technology.
- Evans, Priscilla, and Dean W. Francis English. 1975. Lakes country regional profile.
- Geissman, N.F., and others. 1986. Distribution of forestland in Missouri. Transactions of the Missouri Academy of Science 20: 5–14.
- Koenig, J.W. 1961. The stratigraphic succession in Missouri. Missouri Geological Survey and Water Resources.
- Missouri Agricultural Statistics Service. 1997. Cedar County agri-facts.
- Missouri Department of Agriculture. 1991. Missouri farm facts.
- Missouri Department of Agriculture. 1998. Missouri farm facts.
- Missouri Department of Conservation. 1990a. Study No. 10: Furbearer harvest evaluation, 1988-89. Federal Aid Project W-13-R-44.
- Missouri Department of Conservation. 1990b. Study No. 68: Archer's index of upland furbearer populations, 1989. Federal Aid Project W-13-R-44.
- Neill, Jerry R. 1987. The geology of Cedar County.
- Robinette, G.O. 1972. Plants/people/and environmental quality. U.S. Department of the Interior, National Park Service.
- Scholten, H. 1988. Farmstead shelterbelts—Protection against wind and snow. University of Minnesota Publication CD-BU-0468.
- Schroeder, Walter A. 1982. Presettlement prairie of Missouri. Missouri Department of Conservation, Natural History Series, number 2.

Smith, W. Brad. 1990. Timber resource of Missouri's northwest Ozarks. Forest Service, North Central Forest Experiment Station Resource Bulletin NC-114.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1998. Keys to soil taxonomy. 8th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

State of Missouri. 1998. Official manual, State of Missouri. Office of the Secretary of State.

Sweet, A.T., and Howard V. Jordan. 1928. Soil survey of Lawrence County, Missouri. U.S. Department of Agriculture.

Thom, Richard H., and James H. Wilson. 1980. The natural divisions of Missouri. Transactions of the Missouri Academy of Sciences 14: 9-23.

United States Department of Agriculture. 1961. Land capability classification. Soil Conservation Service. U.S. Department of Agriculture Handbook 210.

United States Department of Agriculture. 1982. National resources inventory. Soil Conservation Service. U.S. Department of Agriculture Statistical Bulletin 686.

Watson, E.B. 1911. Soil survey of Cedar County, Missouri. U.S. Department of Agriculture, Bureau of Soils.

Glossary

ABC soil. A soil having an A, a B, and a C horizon.

AC soil. A soil having only an A and a C horizon.

Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvial fan. The fanlike deposit of a stream where it issues from a gorge upon a plain or of a tributary stream near or at its junction with its main stream.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Alpha,alpha-dipyridyl. A dye that when dissolved in 1N ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction indicates a type of redoximorphic feature.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Aspect. The direction in which a slope faces.

Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in

inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Backslope. The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

Basal area. The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Base slope. A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).

Bedding planes. Fine strata, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediment.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography. A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Bench terrace. A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Board foot. A unit of measure of the wood in lumber, logs, or trees. The amount of wood in a board 1 foot wide, 1 foot long, and 1 inch thick before finishing.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breaks. The steep and very steep broken land at the border of an upland summit that is dissected by ravines.

Breast height. An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management. Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Cable yarding. A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena. A sequence, or "chain," of soils on a landscape that formed in similar kinds of parent material but have different characteristics as a result of differences in relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100

grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Channeled. Refers to a drainage area in which natural meandering or repeated branching and convergence of a streambed have created deeply incised cuts, either active or abandoned, in alluvial material.

Channery soil material. Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Chert. A hard, extremely dense or compact, dull to semivitreous, cryptocrystalline sedimentary rock consisting dominantly of interlocking crystals of quartz less than about 30 mm in diameter. Chert may contain amorphous silica (opal). It can contain impurities, such as calcite, iron oxide, or the remains of siliceous and other organisms. It has a tough, splintery to conchoidal fracture and may be white or variously colored gray, green, blue, pink, red, yellow, brown, and black. Chert occurs principally as nodular or concretionary segregations in limestone and dolostone.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Clayey soil. Silty clay, sandy clay, or clay.

Claypan. A slowly permeable soil horizon that contains much more clay than the horizons above it. A claypan is commonly hard when dry and plastic or stiff when wet.

Clearcut. A method of forest harvesting that removes the entire stand of trees in one cutting. Reproduction is achieved artificially or by natural seeding from the adjacent stands.

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Closed depression. A low area completely surrounded by higher ground and having no natural outlet.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

Codominant trees. Trees whose crowns form the general level of the forest canopy and that receive full light from above but comparatively little from the sides.

COLE (coefficient of linear extensibility). See Linear extensibility.

Colluvium. Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Commercial forest. Forestland capable of producing 20 cubic feet or more per acre per year at the culmination of the mean annual increment.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conglomerate. A coarse grained, clastic rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured

material. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Consolidated sandstone. Sandstone that disperses within a few hours when fragments are placed in water. The fragments are extremely hard or very hard when dry, are not easily crushed, and cannot be textured by the usual field method.

Consolidated shale. Shale that disperses within a few hours when fragments are placed in water. The fragments are extremely hard or very hard when dry and are not easily crushed.

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Crop residue management. Returning crop residue

to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Cross-slope farming. Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Culmination of the mean annual increment (CMAI).

The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Deep to water (in tables). Deep to permanent water during the dry season.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Depth to bedrock (in tables). Bedrock is too near the surface for the specified use.

Dip slope. A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Divided-slope farming. A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

Dolomite (mineral). A common rock-forming rhombohedral carbonate mineral: $\text{CaMg}(\text{CO}_3)_2$.

Dolostone. A carbonate sedimentary rock consisting chiefly (more than 50 percent by weight or by areal percentages under the microscope) of the mineral dolomite.

Dominant trees. Trees whose crowns form the general level of the forest canopy and that receive full light from above and from the sides.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained*. These classes are defined in the “Soil Survey Manual.”

Drainage, surface. Runoff, or surface flow of water, from an area.

Drainageway. An area of ground at a lower elevation than the surrounding ground and in which water collects and is drained to a closed depression or lake or to a drainageway at a lower elevation. A drainageway may or may not have distinctly incised channels at its upper reaches or throughout its course.

Draw. A small stream valley that generally is more open and has broader bottom land than a ravine or gulch.

Droughty (in tables). The soil holds an insufficient amount of water for plants during dry periods.

Duff. A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation. A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Episaturation. A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erodes easily (in tables). The soil is easily eroded by water.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Erosion pavement. A layer of gravel or stones that remains on the surface after fine particles are removed by sheet or rill erosion.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Synonym: scarp.

Even aged. Refers to a stand of trees in which only small differences in age occur between individual trees. A range of 20 years is allowed.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fast intake (in tables). The rapid movement of water into the soil.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the oven-dry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3

days after a soaking rain; also called *normal field capacity*, *normal moisture capacity*, or *capillary capacity*.

Fill slope. A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

Fine textured soil. Sandy clay, silty clay, or clay.

Firebreak. An area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flaggy soil material. Material that has, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Flood-plain step. An essentially flat alluvial surface within a valley that is frequently covered by floodwater from the present stream; any approximately horizontal surface frequently modified by scour and/or deposition. May occur individually or as a series of steps.

Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.

Footslope. The position that forms the inner, gently inclined surface at the base of a hillslope. In profile, footslopes are commonly concave. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb. Any herbaceous plant not a grass or a sedge.

Forest cover. All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above.

When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Graded stripcropping. Growing crops in strips that grade toward a protected waterway.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hard to pack (in tables). Difficult to compact using regular earthwork construction equipment.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Head out. To form a flower head.

Head slope. A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

Heavy metal. Inorganic substances that are solid at

ordinary temperatures and are not soluble in water. They form oxides and hydroxides that are basic. Examples are copper, iron, cadmium, zinc, manganese, lead, and arsenic.

Highly erodible (in tables). The soil has a wind erodibility index greater than 8 and is very susceptible to erosion by water.

High-residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill. A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the

properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Infrequent flooding (in tables). Flooding occurs at an interval that limits riparian plant species.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net

irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Interfluv. An elevated area between two drainageways that sheds water to those drainageways.

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Iron depletions. Low-chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal, but having a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:
Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.
Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.
Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.
Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is

allowed to flow onto an area without controlled distribution.

Karst (topography). The relief of an area underlain by limestone that dissolves in differing degrees, thus forming numerous depressions or small basins.

Knoll. A small, low, rounded hill rising above adjacent landforms.

K_{sat} . Saturated hydraulic conductivity. (See Permeability.)

Landslide. The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Limestone. A sedimentary rock consisting chiefly (more than 50 percent) of calcium carbonate, primarily in the form of calcite. Limestones are usually formed by a combination of organic and inorganic processes and include chemical and clastic (soluble and insoluble) constituents; many contain fossils.

Linear extensibility. Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at $1/3$ - or $1/10$ -bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loamy soil. Coarse sandy loam, sandy loam, fine sandy loam, very fine sandy loam, loam, silt loam, silt, clay loam, sandy clay loam, or silty clay loam.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

Low strength. The soil is not strong enough to support loads.

Low-residue crops. Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until

the next crop in the rotation is established. These crops return little organic matter to the soil.

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

Mean annual increment (MAI). The average annual increase in volume of a tree during the entire life of the tree.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Merchantable trees. Trees that are of sufficient size to be economically processed into wood products.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

Micro-high. An area that is 2 to 12 inches higher than the adjacent micro-low.

Micro-low. An area that is 2 to 12 inches lower than the adjacent micro-high.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few*, *common*, and *many*;

size—*fine*, *medium*, and *coarse*; and contrast—*faint*, *distinct*, and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Mudstone. Sedimentary rock formed by induration of silt and clay in approximately equal amounts.

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up nodules. If formed in place, nodules of iron oxide or manganese oxide are considered types of redoximorphic concentrations.

Nose slope. A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent.

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Overstory. The trees in a forest that form the upper crown cover.

Oxbow. The horseshoe-shaped channel of a former meander, remaining after the stream formed a cutoff across a narrow meander neck.

Paleoterrace. An erosional remnant of a terrace that retains the surface form and alluvial deposits of its origin but was not emplaced by, and commonly does not grade to, a present-day stream or drainage network.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan*, *fragipan*, *claypan*, *plowpan*, and *traffic pan*.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called “a soil.” A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The movement of water through the soil.

Percolates slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as “saturated hydraulic conductivity,” which is defined in the “Soil Survey Manual.” In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as “permeability.” Terms describing permeability, measured in inches per hour, are as follows:

Impermeable	less than 0.0015 inch
Very slow	0.0015 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plateau. An extensive upland mass with relatively flat summit area that is considerably elevated (more

than 100 meters) above adjacent lowlands and separated from them on one or more sides by escarpments.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid or very rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Potential native plant community. See Climax plant community.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Quartzite, metamorphic. Rock consisting mainly of quartz that formed through recrystallization of quartz-rich sandstone or chert.

Quartzite, sedimentary. Very hard but unmetamorphosed sandstone consisting chiefly of quartz grains.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The

degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Redoximorphic concentrations. Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.

Redoximorphic depletions. Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.

Redoximorphic features. Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.

Reduced matrix. A soil matrix that has low chroma in situ because of chemically reduced iron (Fe II). The chemical reduction results from nearly continuous wetness. The matrix undergoes a change in hue or chroma within 30 minutes after exposure to air as the iron is oxidized (Fe III). A type of redoximorphic feature.

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

Relict stream terrace. One of a series of platforms in or adjacent to a stream valley that formed prior to the current stream system.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rill. A steep-sided channel resulting from accelerated

erosion. A rill generally is a few inches deep and not wide enough to be an obstacle to farm machinery.

Riser. The relatively short, steeply sloping area below a terrace tread that grades to a lower terrace tread or base level.

Riverwash. Unstable areas of sandy, silty, clayey, or gravelly sediments. These areas are flooded, washed, and reworked by rivers so frequently that they support little or no vegetation.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rock outcrop. Exposures of bare bedrock other than lava flows and rock-lined pits.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Sandy soil. Sand or loamy sand.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Sawlogs. Logs of suitable size and quality for the production of lumber.

Scarification. The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

Seasonal wetness (in tables). The soil may be wet during the period of desired use. The wetness usually occurs during the winter and early spring.

Seasonally ponded (in tables). Standing water on soils in closed depressions that is removed only by percolation or evapotranspiration. Generally occurs during the winter and early spring.

Second bottom. The first terrace above the normal flood plain (or first bottom) of a river.

Sedimentary plain. An extensive nearly level to gently rolling or moderately sloping area that is underlain by sedimentary bedrock and that has slopes of 0 to 8 percent.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Sedimentary uplands. Land areas of bedrock formed from water- or wind-deposited sediments. These areas are higher on the landscape than the flood plain.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Semiconsolidated sedimentary beds. Soft geologic sediments that disperse when fragments are placed in water. The fragments are hard or very hard when dry. Determining the texture by the usual field method is difficult.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shoulder. The position that forms the uppermost inclined surface near the top of a hillslope. It is a transition from backslope to summit. The surface is dominantly convex in profile and erosional in origin.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Side slope. A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay

(0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Sinkhole. A depression in the landscape where limestone has been dissolved.

Site class. A grouping of site indexes into five to seven production capability levels. Each level can be represented by a site curve.

Site curve (50-year). A set of related curves on a graph that shows the average height of dominant or dominant and codominant trees for a range of ages on soils that differ in productivity. Each level is represented by a curve. The basis of the curves is the height of dominant or dominant and codominant trees that are 50 years old or are 50 years old at breast height.

Site curve (100-year). A set of related curves on a graph that shows the average height of dominant or dominant and codominant trees for a range of ages on soils that differ in productivity. Each level is represented by a curve. The basis of the curves is the height of dominant or dominant and codominant trees that are 100 years old or are 100 years old at breast height.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Skid trails. Pathways along which logs are dragged to a common site for loading onto a logging truck.

Slash. The branches, treetops, reject logs, and broken or uprooted trees left on the ground after logging.

Slippage (in tables). Soil mass susceptible to movement downslope when loaded, excavated, or wet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slope/erodibility (in tables). A combination of slope and susceptibility to water erosion may restrict the specified use.

Slow intake (in tables). The slow movement of water into the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief and by the passage of time.

Soil reaction (in tables). The soil reaction is either too high or too low for the specified use.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Stickiness (surface) (in tables). The soil is slippery and sticky when wet and slow to dry.

Stone line. A concentration of rock fragments in a soil. Generally, it is indicative of an old weathered surface. In a cross section, the line may be one fragment or more thick. It generally overlies material that weathered in place and is overlain by recent sediment of variable thickness.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Strath terrace. A surface cut formed by the erosion of hard or semiconsolidated bedrock and thinly mantled with stream deposits.

Stream channel. The hollow bed where a natural stream of surface water flows or may flow; the deepest or central part of the bed, formed by the main current and covered more or less continuously by water.

Stream terrace. One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel. It originally formed near the level of the stream and is the dissected remnants of an abandoned flood plain, streambed, or valley floor produced during a former stage of erosion or deposition.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summit. The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the “plow layer,” or the “Ap horizon.”

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Tailwater. The water directly downstream from a structure.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand*, *loamy sand*, *sandy loam*, *loam*, *silt loam*, *silt*, *sandy clay loam*, *clay loam*, *silty clay loam*, *sandy clay*, *silty clay*, and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying “coarse,” “fine,” or “very fine.” The abbreviations (see table 18) are *C*—clay, *CL*—clay loam, *COS*—coarse sand, *COSL*—coarse sandy loam, *FS*—fine sand, *FSL*—fine sandy loam, *L*—loam, *LCOS*—loamy coarse sand, *LFS*—loamy fine sand, *LS*—loamy sand, *LVFS*—loamy very fine sand, *S*—sand, *SC*—sandy clay, *SCL*—sandy clay loam, *SI*—silt, *SIC*—silty clay, *SICL*—silty clay loam, *SIL*—silt loam, *SL*—sandy loam, *VFS*—very fine sand, and *VFSL*—very fine sandy loam. Terms used in lieu of texture descriptions are *WB*—weathered bedrock and *UWB*—unweathered bedrock. The texture modifiers that may apply to textural classes are *BY*—bouldery, *BYV*—very bouldery, *BYX*—extremely bouldery, *CB*—cobbly, *CBV*—very cobbly, *CBX*—extremely cobbly, *CN*—channery, *CNV*—very channery, *CNX*—extremely channery, *FL*—flaggy, *FLV*—very flaggy, *FLX*—extremely flaggy, *GR*—gravelly, *GRV*—very gravelly, *GRX*—extremely gravelly, *SR*—stratified, *ST*—stony, *STV*—very stony, and *STX*—extremely stony.

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope. The position that forms the gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a

hillslope continuum that grades to valley or closed-depression floors.

Too clayey (in tables). The soil is slippery and sticky when wet and slow to dry.

Too sandy (in tables). The soil is soft and loose, droughty, and low in fertility or is too fine to be used as gravel.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Trafficability. The degree to which a soil is capable of supporting vehicular traffic across a wide range in soil moisture conditions.

Tread. The relatively flat surface of a terrace that was cut or built by stream or wave action.

Upland. Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Valley. An elongated depressional area primarily developed by stream action.

Valley fill. In glaciated regions, material deposited in stream valleys by glacial meltwater. In nonglaciated regions, alluvium deposited by heavily loaded streams.

Variation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Water bars. Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an oven-dry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Table 1.--Temperature and Precipitation
(Recorded in the period 1961-90 at Caplinger Mills, Missouri)

Month	Temperature						Precipitation					
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have--		Average number of growing degree days*	Average	2 years in 10 will have--		Average number of days with 0.10 inch or more	Average snowfall	
				Maximum temperature higher than--	Minimum temperature lower than--			Less than--	More than--			
°F	°F	°F	°F	°F	Units	In	In	In		In		
January----	43.3	19.4	31.3	71	-9	7	1.37	0.35	2.19	3	2.9	
February---	47.8	24.2	36.0	75	-3	17	1.68	.73	2.49	3	3.5	
March-----	57.8	32.8	45.3	82	5	75	3.30	1.90	4.54	6	2.8	
April-----	70.4	43.8	57.1	88	21	247	4.02	1.79	5.93	6	.1	
May-----	77.9	52.2	65.0	91	30	458	5.00	3.05	6.76	7	.0	
June-----	85.0	60.5	72.7	96	43	656	5.03	2.89	6.94	6	.0	
July-----	90.9	64.5	77.7	103	45	838	2.39	.92	3.62	4	.0	
August-----	89.3	61.8	75.5	102	44	746	3.99	1.66	5.97	5	.0	
September--	80.1	55.2	67.6	96	33	510	4.49	2.08	6.56	6	.0	
October----	71.8	44.4	58.1	91	23	281	3.67	1.71	5.35	5	.0	
November---	57.0	33.4	45.2	79	8	62	3.16	.78	5.05	4	.8	
December---	45.8	24.5	35.1	72	-5	13	2.45	1.12	3.60	5	2.9	
Yearly:												
Average---	68.1	43.1	55.6	---	---	---	---	---	---	---	---	
Extreme---	106	-14	---	104	-10	---	---	---	---	---	---	
Total-----	---	---	---	---	---	3,909	40.56	28.51	44.18	60	13.0	

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees F).

Table 2.--Freeze Dates in Spring and Fall
(Recorded in the period 1961-90 at Caplinger Mills, Missouri)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 13	Apr. 27	May 6
2 years in 10 later than--	Apr. 6	Apr. 22	May 2
5 years in 10 later than--	Mar. 23	Apr. 12	Apr. 23
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 17	Oct. 3	Sept. 25
2 years in 10 earlier than--	Oct. 23	Oct. 9	Oct. 1
5 years in 10 earlier than--	Nov. 4	Oct. 20	Oct. 12

Table 3.--Growing Season
(Recorded in the period 1961-90 at Caplinger
Mills, Missouri)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	194	165	149
8 years in 10	204	172	157
5 years in 10	221	186	172
2 years in 10	239	200	187
1 year in 10	249	208	195

Table 4.--Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
40000	Barden silt loam, 1 to 3 percent slopes-----	9,609	3.0
40001	Bolivar loam, 3 to 8 percent slopes-----	1,112	0.3
40004	Barden loam, 2 to 5 percent slopes-----	12,251	3.8
40005	Sylvania loam, 5 to 15 percent slopes, very stony-----	6,441	2.0
40006	Barco-Sylvania complex, 2 to 5 percent slopes-----	20,205	6.3
40007	Eldorado gravelly loam, 3 to 15 percent slopes, very stony-----	204	*
40008	Parsons silt loam, 0 to 2 percent slopes-----	916	0.3
40009	Sylvania loam, 5 to 8 percent slopes-----	5,746	1.8
40010	Collinsville-Rock outcrop complex, 3 to 15 percent slopes-----	1,655	0.5
44001	Quarles silt loam, 0 to 2 percent slopes, rarely flooded-----	1,751	0.5
46000	Humansville silt loam, 0 to 2 percent slopes, frequently flooded-----	1,951	0.6
66000	Moniteau silt loam, 0 to 2 percent slopes, occasionally flooded-----	4,377	1.4
66001	Dameron silt loam, 0 to 3 percent slopes, frequently flooded-----	62	*
70000	Bona gravelly silt loam, 3 to 8 percent slopes-----	11,274	3.5
70001	Bona gravelly silt loam, 8 to 15 percent slopes-----	5,367	1.7
70002	Alsup gravelly silt loam, 3 to 8 percent slopes-----	1,526	0.5
70003	Alsup gravelly silt loam, 8 to 15 percent slopes-----	14	*
70004	Alsup silt loam, 15 to 35 percent slopes, very stony-----	2,007	0.6
70006	Creldon silt loam, 1 to 3 percent slopes-----	6,097	1.9
70007	Cliquot gravelly loam, 8 to 15 percent slopes-----	28,112	8.8
70008	Goss gravelly silt loam, 3 to 8 percent slopes-----	19,203	6.0
70009	Goss gravelly silt loam, 8 to 15 percent slopes-----	17,968	5.6
70010	Goss very cobbly silt loam, 15 to 35 percent slopes-----	267	*
70011	Goss-Moko complex, 8 to 35 percent slopes-----	26	*
70012	Hoberg silt loam, 2 to 5 percent slopes-----	6,126	1.9
70014	Moko-Rock outcrop complex, 15 to 35 percent slopes, very stony-----	1,302	0.4
70040	Cliquot-Bolivar complex, 3 to 8 percent slopes-----	36,292	11.4
70041	Goss very gravelly silt loam, 8 to 15 percent slopes-----	98	*
70042	Goss very gravelly silt loam, 15 to 35 percent slopes-----	1,333	0.4
70043	Sonsac-Moko-Rock outcrop complex, 3 to 15 percent slopes-----	13,508	4.2
70044	Sonsac-Moko complex, 15 to 35 percent slopes, rocky-----	11,157	3.5
70047	Wanda silt loam, 2 to 5 percent slopes-----	656	0.2
70048	Alsup silt loam, 8 to 15 percent slopes, very stony-----	3,854	1.2
70052	Arnica loam, 2 to 5 percent slopes-----	3,376	1.1
70053	Courtois silt loam, 2 to 5 percent slopes-----	3,240	1.0
70054	Cliquot gravelly loam, 3 to 20 percent slopes, very stony-----	20,350	6.4
71254	Cotter silt loam, 0 to 2 percent slopes, rarely flooded-----	1,624	0.5
71750	Cleora fine sandy loam, 0 to 2 percent slopes, frequently flooded-----	10,742	3.4
73000	Pomme silt loam, 3 to 8 percent slopes-----	4,576	1.4
73003	Ocie-Gatewood complex, 15 to 35 percent slopes-----	1,405	0.4
73005	Ocie gravelly silt loam, 3 to 15 percent slopes-----	3,688	1.2
73007	Plato silt loam, 1 to 3 percent slopes-----	460	0.1
73008	Viraton silt loam, 2 to 5 percent slopes-----	1,099	0.3
73059	Pomme silt loam, 1 to 3 percent slopes-----	989	0.3
73075	Hobson loam, 1 to 3 percent slopes-----	2,605	0.8
74625	Hartville silt loam, 3 to 8 percent slopes-----	1,800	0.6
74641	Secesh silt loam, 0 to 2 percent slopes, occasionally flooded-----	614	0.2
75375	Horsecreek silt loam, 0 to 2 percent slopes, occasionally flooded-----	535	0.2
75377	Racket silt loam, 0 to 3 percent slopes, frequently flooded-----	3,850	1.2
75378	Sturkie silt loam, 0 to 2 percent slopes, frequently flooded-----	11,598	3.6
99000	Pits, quarries-----	146	*
99001	Water-----	13,854	4.3
99004	Kanima very channery silt loam, 8 to 50 percent slopes-----	36	*
99007	Dam-----	63	*
	Total-----	319,117	100.0

* Less than 0.1 percent.

Table 5.--Prime Farmland

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland. If a soil is prime farmland only under certain conditions, the conditions are specified in parentheses after the soil name)

Map symbol	Soil name
40000	Barden silt loam, 1 to 3 percent slopes
40004	Barden loam, 2 to 5 percent slopes
40006	Barco-Sylvania complex, 2 to 5 percent slopes
40008	Parsons silt loam, 0 to 2 percent slopes
44001	Quarles silt loam, 0 to 2 percent slopes, rarely flooded (where drained)
46000	Humansville silt loam, 0 to 2 percent slopes, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
66000	Moniteau silt loam, 0 to 2 percent slopes, occasionally flooded (where drained)
66001	Dameron silt loam, 0 to 3 percent slopes, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
70006	Crelton silt loam, 1 to 3 percent slopes
70047	Wanda silt loam, 2 to 5 percent slopes
70052	Arnica loam, 2 to 5 percent slopes
70053	Courtois silt loam, 2 to 5 percent slopes
71254	Cotter silt loam, 0 to 2 percent slopes, rarely flooded
71750	Cleora fine sandy loam, 0 to 2 percent slopes, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
73007	Plato silt loam, 1 to 3 percent slopes
73059	Pomme silt loam, 1 to 3 percent slopes
74641	Secesh silt loam, 0 to 2 percent slopes, occasionally flooded
75375	Horsecreek silt loam, 0 to 2 percent slopes, occasionally flooded
75377	Racket silt loam, 0 to 3 percent slopes, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
75378	Sturkie silt loam, 0 to 2 percent slopes, frequently flooded (where protected from flooding or not frequently flooded during the growing season)

Table 6.--Land Capability and Yields per Acre of Crops

(Yields are those that can be expected under a high level of management. They are for nonirrigated areas. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Map symbol and soil name	Land capability	Corn	Grain sorghum	Soybeans	Winter wheat
		Bu	Bu	Bu	Bu
40000: Barden-----	2e	117	88	39	47
40001: Bolivar-----	3e	72	57	24	29
40004: Barden-----	2e	117	92	39	47
40005: Sylvania-----	4e	---	---	---	30
40006: Barco-----	2e	78	58	26	31
Sylvania-----	2e	94	71	31	38
40007: Eldorado-----	6e	---	---	---	---
40008: Parsons-----	2s	111	83	37	44
40009: Sylvania-----	3e	89	67	30	36
40010: Collinsville----	7s	---	---	---	---
Rock outcrop.					
44001: Quarles-----	2w	100	75	33	40
46000: Humansville-----	3w	128	101	42	51
66000: Moniteau-----	3w	106	83	35	42
66001: Dameron-----	3w	94	71	31	38
70000: Bona-----	3e	72	57	24	29
70001: Bona-----	4e	---	50	---	26
70002: Alsup-----	3e	61	48	20	24
70003: Alsup-----	6e	---	42	---	21
70004: Alsup-----	7e	---	---	---	---

Table 6.--Land Capability and Yields per Acre of Crops--Continued

Map symbol and soil name	Land capability	Corn	Grain sorghum	Soybeans	Winter wheat
		Bu	Bu	Bu	Bu
70006: Crelton-----	2e	97	73	32	39
70007: Cliquot-----	4e	---	56	---	30
70008: Goss-----	4s	61	46	19	23
70009: Goss-----	6e	---	40	---	21
70010: Goss-----	7e	---	---	---	---
70011: Goss-----	7e	---	---	---	---
Moko-----	6s	---	---	---	---
70012: Hoberg-----	2e	100	75	33	40
70014: Moko-----	7s	---	---	---	---
Rock outcrop.					
70040: Cliquot-----	3e	---	44	---	22
Bolivar-----	3e	---	57	---	29
70041: Goss-----	6e	---	---	---	---
70042: Goss-----	7e	---	---	---	---
70043: Sonsac-----	6e	---	---	---	---
Moko-----	6s	---	---	---	---
Rock outcrop----	8s	---	---	---	---
70044: Sonsac-----	7e	---	---	---	---
Moko-----	7s	---	---	---	---
70047: Wanda-----	2e	117	92	39	47
70048: Alsup-----	7s	---	---	---	---
70052: Arnica-----	2e	97	73	32	39

Table 6.--Land Capability and Yields per Acre of Crops--Continued

Map symbol and soil name	Land capability	Corn	Grain sorghum	Soybeans	Winter wheat
		Bu	Bu	Bu	Bu
70053: Courtois-----	2e	89	67	30	36
70054: Cliquot-----	4e	---	---	---	---
71254: Cotter-----	1	128	96	43	51
71750: Cleora-----	2w	86	65	29	34
73000: Pomme-----	3e	80	63	27	32
73003: Ocie-----	7e	---	---	---	---
Gatewood-----	7e	---	---	---	---
73005: Ocie-----	4e	---	46	---	23
73007: Plato-----	2e	78	61	26	31
73008: Viraton-----	2e	69	55	23	28
73059: Pomme-----	2e	86	65	29	34
73075: Hobson-----	2e	75	56	25	30
74625: Hartville-----	3e	94	71	31	38
74641: Secesh-----	2w	94	71	31	38
75375: Horsecreek-----	2w	110	88	37	44
75377: Racket-----	2w	94	74	31	39
75378: Sturkie-----	4w	100	79	33	40
99000. Pits, quarries					
99001. Water					
99004: Kanima-----	7s	---	---	---	---

Table 6.--Land Capability and Yields per Acre of Crops--Continued

Map symbol and soil name	Land capability	Corn	Grain sorghum	Soybeans	Winter wheat
		Bu	Bu	Bu	Bu
99007. Dam					

Table 7.--Pasture and Hayland Groups and Yields per Acre of Hay and Pasture

(See text for descriptions of the groups listed in this table. Yields are those that can be expected under a high level of management. They are for nonirrigated areas. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Map symbol and soil name	Pasture and hayland group	Orchardgrass-alfalfa hay	Tall fescue hay	Tall fescue seed	Tall fescue-red clover hay	Warm-season grasses
		Tons	Tons	Lbs	Tons	Tons
40000: Barden-----	CyU	4.9	3.5	420	4.1	4.9
40001: Bolivar-----	MDU	3.1	2.2	253	2.5	3.0
40004: Barden-----	CyU	5.0	3.5	420	4.1	4.9
40005: Sylvania-----	GrU	3.2	2.3	270	2.6	3.2
40006: Barco-----	MDU	3.3	2.3	280	2.7	3.3
Sylvania-----	CyU	4.0	2.8	340	3.3	4.0
40007: Eldorado-----	GrU	2.7	1.9	230	2.2	2.7
40008: Parsons-----	CyU	---	3.3	400	3.9	4.7
40009: Sylvania-----	CyU	3.7	2.7	320	3.1	3.2
40010: Collinsville----	ShU	---	---	---	---	---
Rock outcrop----	GNS	---	---	---	---	---
44001: Quarles-----	WCB	---	3.0	360	3.5	4.2
46000: Humansville----	WLO	---	3.8	447	4.5	5.1
66000: Moniteau-----	WLB	---	3.2	369	---	3.7
66001: Dameron-----	LyO	4.0	2.8	340	3.3	4.0
70000: Bona-----	GrU	3.1	2.2	253	2.5	3.0
70001: Bona-----	GrU	2.7	1.9	224	2.2	2.7
70002: Alsup-----	GrU	2.0	1.8	214	2.1	2.6
70003: Alsup-----	GrU	2.3	1.6	185	1.8	2.2

Table 7.--Pasture and Hayland Groups and Yields per Acre of Hay and Pasture--Continued

Map symbol and soil name	Pasture and hayland group	Orchardgrass- alfalfa hay	Tall fescue hay	Tall fescue seed	Tall fescue- red clover hay	Warm-season grasses
		Tons	Tons	Lbs	Tons	Tons
70004: Alsup-----	GrU	---	1.1	126	1.3	1.5
70006: Creldon-----	LyP	4.1	2.9	350	3.4	4.1
70007: Cliquot-----	GrU	3.2	2.3	270	2.6	3.2
70008: Goss-----	GrU	2.5	1.8	220	2.0	2.4
70009: Goss-----	GrU	2.2	1.6	190	1.8	2.2
70010: Goss-----	GrU	1.5	1.1	130	---	1.5
70011: Goss-----	GrU	---	---	78	---	0.9
Moko-----	ShU	---	---	---	---	---
70012: Hoberg-----	LyP	4.2	3.0	360	3.5	4.2
70014: Moko-----	ShU	---	---	---	---	---
Rock outcrop---	GNS	---	---	---	---	---
70040: Cliquot-----	CyU	2.4	1.7	194	1.9	2.3
Bolivar-----	MDU	3.0	2.2	260	---	3.0
70041: Goss-----	GrU	2.2	1.6	190	1.8	2.2
70042: Goss-----	GrU	---	1.1	---	---	1.3
70043: Sonsac-----	MDU	---	0.9	---	---	1.3
Moko-----	ShU	---	0.7	---	---	0.9
Rock outcrop---	GNS	---	---	---	---	---
70044: Sonsac-----	MDU	---	0.4	---	---	0.6
Moko-----	ShU	---	0.2	---	---	0.2
70047: Wanda-----	LyU	4.9	3.5	420	4.1	4.9
70048: Alsup-----	GrU	---	2.3	270	2.6	3.2

Table 7.--Pasture and Hayland Groups and Yields per Acre of Hay and Pasture--Continued

Map symbol and soil name	Pasture and hayland group	Orchardgrass- alfalfa hay	Tall fescue hay	Tall fescue seed	Tall fescue- red clover hay	Warm-season grasses
		Tons	Tons	Lbs	Tons	Tons
70052: Arnica-----	LyU	4.1	2.9	350	3.4	4.1
70053: Courtois-----	CyU	3.7	2.7	320	3.1	3.7
70054: Cliquot-----	GrU	---	2.0	---	---	2.8
71254: Cotter-----	LyO	5.4	3.8	460	4.5	5.4
71750: Cleora-----	LyO	3.6	2.6	310	3.0	3.6
73000: Pomme-----	LyU	3.4	2.4	282	2.8	3.4
73003: Ocie-----	GrU	---	0.9	107	1.8	2.2
Gatewood-----	MDU	1.1	0.9	107	1.1	1.3
73005: Ocie-----	GrU	2.5	1.8	204	2.0	2.4
73007: Plato-----	WtP	---	2.3	280	2.7	6.0
73008: Viraton-----	LyP	3.0	2.1	243	2.4	2.9
73059: Pomme-----	LyU	3.6	2.6	310	3.0	3.6
73075: Hobson-----	LyP	3.2	2.3	270	2.6	3.2
74625: Hartville-----	WCU	4.0	2.8	340	3.3	4.0
74641: Secesh-----	LyO	4.0	2.8	340	3.3	4.0
75375: Horsecreek-----	LyO	4.7	3.3	400	3.9	6.4
75377: Racket-----	LyO	4.0	2.8	330	3.3	4.0
75378: Sturkie-----	LyO	5.0	3.5	400	3.5	4.2
99000. Pits, quarries						
99001. Water						

Table 7.--Pasture and Hayland Groups and Yields per Acre of Hay and Pasture--Continued

Map symbol and soil name	Pasture and hayland group	Orchardgrass- alfalfa hay	Tall fescue hay	Tall fescue seed	Tall fescue- red clover hay	Warm-season grasses
		Tons	Tons	Lbs	Tons	Tons
99004: Kanima-----	GrU	---	---	---	---	---
99007. Dam						

Table 8.--Forest Productivity

(Only the soils suitable for production of commercial trees are listed. Site index is based on 50 years. Absence of an entry indicates that information was not available)

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber cu ft/ac	
40001: Bolivar-----	Black oak----- Black walnut----- Northern red oak---- White oak-----	56 --- 73 53	43 --- 57 29	Green ash, shortleaf pine, white oak
44001: Quarles-----	Eastern cottonwood-- Pecan----- Pin oak-----	--- 55 80	--- 38 57	Pecan, pin oak
46000: Humansville-----	Eastern cottonwood-- Loblolly pine----- Sweetgum-----	100 90 90	129 129 100	Eastern cottonwood, loblolly pine, sweetgum
66000: Moniteau-----	Pin oak-----	70	57	Black willow, eastern cottonwood, green ash, pin oak, silver maple, sweetgum, white oak, willow oak
66001: Dameron-----	American sycamore--- Black walnut----- Green ash----- White oak-----	--- 72 70 ---	--- 66 72 ---	Black walnut, green ash, pecan
70002: Alsup-----	Black oak----- Northern red oak---- White oak-----	51 79 ---	29 57 ---	Black oak, northern red oak, white oak
70003: Alsup-----	Black oak----- Northern red oak---- White oak-----	51 79 ---	29 57 ---	Black oak, northern red oak, white oak
70004: Alsup-----	Black oak----- Northern red oak---- White oak-----	51 79 ---	29 57 ---	Black oak, northern red oak, white oak
70007: Cliquot-----	Black oak----- Eastern redcedar---- Post oak-----	55 30 50	43 29 29	Black oak, eastern redcedar, shortleaf pine
70008: Goss-----	White oak----- Post oak----- Blackjack oak----- Black oak-----	60 --- --- ---	43 --- --- ---	Black oak, shortleaf pine, white oak

Table 8.--Forest Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber cu ft/ac	
70009: Goss-----	Black oak-----	---	---	Black oak, shortleaf pine, white oak
	Blackjack oak-----	---	---	
	Post oak-----	---	---	
	White oak-----	60	43	
70010: Goss-----	Black oak-----	---	---	Black oak, shortleaf pine, white oak
	Blackjack oak-----	---	---	
	Post oak-----	---	---	
	White oak-----	60	43	
70011: Goss-----	Black oak-----	---	---	Black oak, shortleaf pine, white oak
	Blackjack oak-----	---	---	
	Post oak-----	---	---	
	White oak-----	60	43	
Moko-----	Eastern redcedar---	30	29	Eastern redcedar
70014: Moko-----	Eastern redcedar---	30	29	Eastern redcedar
Rock outcrop.				
70040: Cliquot-----	Black oak-----	55	43	Black oak, eastern redcedar, shortleaf pine
	Eastern redcedar---	30	29	
	Post oak-----	50	29	
Bolivar-----	Black oak-----	56	43	Shortleaf pine, white oak
	Black walnut-----	---	---	
	Northern red oak---	73	57	
	White oak-----	53	29	
70041: Goss-----	Black oak-----	---	---	Black oak, shortleaf pine, white oak
	Blackjack oak-----	---	---	
	Post oak-----	---	---	
	White oak-----	60	43	
70042: Goss-----	Black oak-----	---	---	Black oak, shortleaf pine, white oak
	Blackjack oak-----	---	---	
	Post oak-----	---	---	
	White oak-----	60	43	
70043: Sonsac-----	Black oak-----	54	43	Black oak, eastern redcedar, shortleaf pine, white oak
	Post oak-----	45	29	
	White oak-----	42	29	
Moko-----	Eastern redcedar---	30	29	Eastern redcedar
Rock outcrop.				
70044: Sonsac-----	Black oak-----	54	43	Black oak, eastern redcedar, shortleaf pine, white oak
	Post oak-----	45	29	
	White oak-----	42	29	

Table 8.--Forest Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber cu ft/ac	
70044: Moko-----	Eastern redcedar----	30	29	Eastern redcedar
70048: Alsup-----	Black oak-----	56	43	Black oak, northern red oak, white oak
	Northern red oak----	60	43	
	White oak-----	51	43	
70052: Arnica-----	Black oak-----	75	57	Green ash, northern red oak, shortleaf pine, white oak
	Northern red oak----	75	57	
	White oak-----	65	43	
70053: Courtois-----	Northern red oak----	---	---	Shortleaf pine
	Shortleaf pine-----	75	114	
	White oak-----	60	43	
70054: Cliquot-----	Black oak-----	55	43	Black oak, eastern redcedar, shortleaf pine
	Eastern redcedar----	30	29	
	Post oak-----	50	29	
71254: Cotter-----	Eastern cottonwood--	100	129	Black walnut, eastern cottonwood, tuliptree
	Tuliptree-----	90	86	
71750: Cleora-----	Eastern cottonwood--	100	129	American sycamore, black cherry, black walnut, eastern cottonwood, sweetgum, white ash
	Northern red oak----	80	57	
	Sweetgum-----	90	100	
73000: Pomme-----	Northern red oak----	65	43	Black walnut, shortleaf pine, white oak
	White oak-----	65	43	
73003: Ocie-----	Black oak-----	58	43	Northern red oak, shortleaf pine
	Northern red oak----	---	---	
	White oak-----	57	43	
Gatewood-----	Black oak-----	42	29	Eastern redcedar, shortleaf pine
	Eastern redcedar----	40	43	
	Post oak-----	43	29	
	White oak-----	45	29	
73005: Ocie-----	Black oak-----	58	43	Northern red oak, shortleaf pine
	Northern red oak----	---	---	
	White oak-----	57	43	
73007: Plato-----	Black oak-----	60	43	Black oak, post oak, shortleaf pine
	Shortleaf pine-----	---	---	
	White oak-----	55	43	

Table 8.--Forest Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber cu ft/ac	
73008: Viraton-----	Black oak-----	60	43	Black oak, shortleaf pine, white oak
	Shortleaf pine-----	56	86	
	White oak-----	55	43	
73059: Pomme-----	Northern red oak---	65	43	Black walnut, shortleaf pine, white oak
	White oak-----	65	43	
73075: Hobson-----	Black oak-----	60	43	Black oak, shortleaf pine, white oak
	White oak-----	55	43	
74625: Hartville-----	White oak-----	55	43	Green ash, pin oak
74641: Secesh-----	American sycamore---	---	---	American sycamore, black walnut, shortleaf pine
	Black oak-----	---	---	
	Black walnut-----	---	---	
	White oak-----	60	43	
75375: Horsecreek-----	American sycamore---	---	---	Black walnut, eastern cottonwood, white ash
	Common hackberry---	---	---	
	Pin oak-----	94	57	
	Red maple-----	---	---	
	Shumard's oak-----	93	57	
75377: Racket-----	American sycamore---	---	---	Black walnut
	Black cherry-----	---	---	
	Black walnut-----	72	72	
	Northern red oak---	---	---	
	White ash-----	---	---	
75378: Sturkie-----	American sycamore---	80	86	American sycamore, black walnut, eastern cottonwood, northern red oak, white oak
	Eastern cottonwood--	100	129	
	Northern red oak---	80	57	
	White oak-----	70	57	

Table 9a.--Forest Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Hand planting		Mechanical planting		Use of harvesting equipment		Mechanical site preparation (surface)		Roads (natural surface)	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
40000: Barden-----	Not limited		Not limited		Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.10	Slightly limited: seasonal wetness (slightly limited)	0.10	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.10
40001: Bolivar-----	Not limited		Slightly limited: slope (slightly limited)	0.10	Moderately limited: low strength (moderately limited)	0.50	Not limited		Moderately limited: low strength (moderately limited)	0.50
40004: Barden-----	Not limited		Not limited		Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.10	Slightly limited: seasonal wetness (slightly limited)	0.10	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.10
40005: Sylvania-----	Not limited		Moderately limited: slope (moderately limited) surface stones (moderately limited)	0.39 0.38	Moderately limited: low strength (moderately limited)	0.50	Not limited		Limited: slippage potential (limited) slope (moderately limited) low strength (moderately limited)	0.90 0.60 0.50
40006: Barco-----	Not limited		Not limited		Moderately limited: low strength (moderately limited)	0.50	Not limited		Moderately limited: low strength (moderately limited)	0.50
Sylvania-----	Not limited		Not limited		Moderately limited: low strength (moderately limited)	0.50	Not limited		Moderately limited: low strength (moderately limited)	0.50

Table 9a.--Forest Management--Continued

Map symbol and soil name	Hand planting		Mechanical planting		Use of harvesting equipment		Mechanical site preparation (surface)		Roads (natural surface)	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
40007: Eldorado-----	Slightly limited: small stones (slightly limited)	0.03	Moderately limited: surface stones (moderately limited) slope (moderately limited) small stones (slightly limited)	0.38 0.34 0.03	Not limited		Not limited		Moderately limited: slope (moderately limited)	0.45
40008: Parsons-----	Moderately limited: seasonal wetness (moderately limited)	0.60	Moderately limited: seasonal wetness (moderately limited)	0.60	Moderately limited: seasonal wetness (moderately limited) low strength (moderately limited)	0.60 0.50	Moderately limited: seasonal wetness (moderately limited)	0.60	Moderately limited: seasonal wetness (moderately limited) slippage potential (moderately limited) low strength (moderately limited)	0.60 0.50 0.50
40009: Sylvania-----	Not limited		Slightly limited: slope (slightly limited)	0.20	Moderately limited: low strength (moderately limited)	0.50	Not limited		Limited: slippage potential (limited) low strength (moderately limited) slope (slightly limited)	0.90 0.50 0.15
40010: Collinsville--	Not limited		Moderately limited: slope (moderately limited)	0.34	Not limited		Not limited		Moderately limited: slope (moderately limited)	0.45
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	
44001: Quarles-----	Moderately limited: seasonal wetness (moderately limited)	0.60	Moderately limited: seasonal wetness (moderately limited)	0.60	Limited: seasonal wetness (limited) low strength (moderately limited)	0.76 0.50	Limited: seasonal wetness (limited)	0.76	Limited: seasonal wetness (limited) low strength (moderately limited)	0.76 0.50

Table 9a.--Forest Management--Continued

Map symbol and soil name	Hand planting		Mechanical planting		Use of harvesting equipment		Mechanical site preparation (surface)		Roads (natural surface)	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
46000: Humansville---	Moderately limited: seasonal wetness (moderately limited)	0.60	Moderately limited: seasonal wetness (moderately limited)	0.60	Limited: seasonal wetness (limited) low strength (moderately limited)	0.81 0.50	Limited: seasonal wetness (limited)	0.81	Very limited: flooding (very limited) seasonal wetness (limited) low strength (moderately limited)	1.00 0.81 0.50
66000: Moniteau-----	Moderately limited: seasonal wetness (moderately limited)	0.60	Moderately limited: seasonal wetness (moderately limited)	0.60	Limited: seasonal wetness (limited) low strength (moderately limited)	0.91 0.50	Limited: seasonal wetness (limited)	0.91	Limited: seasonal wetness (limited) flooding (moderately limited) low strength (moderately limited)	0.91 0.60 0.50
66001: Dameron-----	Very limited: small stones (limited)	0.99	Limited: small stones (limited)	0.99	Moderately limited: low strength (moderately limited)	0.50	Limited: small stones (limited)	1.00	Very limited: flooding (very limited) low strength (moderately limited)	1.00 0.50
70000: Bona-----	Slightly limited: small stones (slightly limited)	0.06	Slightly limited: slope (slightly limited) small stones (slightly limited)	0.10 0.06	Moderately limited: low strength (moderately limited)	0.50	Not limited		Moderately limited: low strength (moderately limited)	0.50
70001: Bona-----	Slightly limited: small stones (slightly limited)	0.15	Moderately limited: slope (moderately limited) small stones (slightly limited)	0.47 0.15	Moderately limited: low strength (moderately limited)	0.50	Not limited		Limited: slope (limited) low strength (moderately limited)	0.76 0.50
70002: Alsop-----	Slightly limited: small stones (slightly limited)	0.05	Slightly limited: slope (slightly limited) small stones (slightly limited)	0.10 0.05	Moderately limited: low strength (moderately limited)	0.50	Not limited		Moderately limited: low strength (moderately limited)	0.50

Table 9a.--Forest Management--Continued

Map symbol and soil name	Hand planting		Mechanical planting		Use of harvesting equipment		Mechanical site preparation (surface)		Roads (natural surface)	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70003: Alsup-----	Slightly limited: small stones (slightly limited)	0.06	Moderately limited: slope (moderately limited) small stones (slightly limited)	0.47 0.06	Moderately limited: low strength (moderately limited)	0.50	Not limited		Limited: slope (limited) low strength (moderately limited)	0.76 0.50
70004: Alsup-----	Slightly limited: slope (slightly limited)	0.14	Limited: slope (limited) surface stones (slightly limited)	0.99 0.30	Moderately limited: slope (moderately limited) low strength (moderately limited)	0.60 0.50	Moderately limited: slope (moderately limited)	0.60	Very limited: slope (very limited) low strength (moderately limited)	1.00 0.50
70006: Crelton-----	Not limited		Not limited		Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.15	Slightly limited: seasonal wetness (slightly limited)	0.15	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.15
70007: Cliquot-----	Slightly limited: small stones (slightly limited)	0.04	Moderately limited: slope (moderately limited) small stones (slightly limited)	0.47 0.04	Not limited		Not limited		Limited: slope (limited)	0.76
70008: Goss-----	Slightly limited: small stones (slightly limited)	0.05	Slightly limited: slope (slightly limited) small stones (slightly limited)	0.10 0.05	Moderately limited: low strength (moderately limited)	0.50	Not limited		Moderately limited: low strength (moderately limited)	0.50
70009: Goss-----	Slightly limited: small stones (slightly limited)	0.10	Moderately limited: slope (moderately limited) small stones (slightly limited)	0.47 0.10	Moderately limited: low strength (moderately limited)	0.50	Not limited		Limited: slope (limited) low strength (moderately limited)	0.76 0.50

Table 9a.--Forest Management--Continued

Map symbol and soil name	Hand planting		Mechanical planting		Use of harvesting equipment		Mechanical site preparation (surface)		Roads (natural surface)	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70010: Goss-----	Moderately limited: large stones (moderately limited) slope (slightly limited) small stones (slightly limited)	0.40 0.14 0.07	Limited: slope (limited) large stones (limited) small stones (slightly limited)	0.99 0.73 0.07	Moderately limited: slope (moderately limited)	0.60	Moderately limited: slope (moderately limited) large stones (moderately limited)	0.60 0.40	Very limited: slope (very limited)	1.00
70011: Goss-----	Moderately limited: small stones (moderately limited) slope (slightly limited)	0.38 0.14	Limited: slope (limited) small stones (moderately limited)	0.99 0.38	Moderately limited: slope (moderately limited)	0.60	Moderately limited: slope (moderately limited) small stones (slightly limited)	0.60 0.24	Very limited: slope (very limited)	1.00
Moko-----	Slightly limited: small stones (slightly limited)	0.02	Moderately limited: slope (moderately limited) large stones (slightly limited) surface stones (slightly limited)	0.34 0.24 0.09	Moderately limited: low strength (moderately limited)	0.50	Not limited		Moderately limited: slippage potential (moderately limited) low strength (moderately limited) slope (moderately limited)	0.50 0.50 0.45
70012: Hoberg-----	Not limited		Not limited		Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.20	Slightly limited: seasonal wetness (slightly limited)	0.20	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.20
70014: Moko-----	Slightly limited: slope (slightly limited) small stones (slightly limited)	0.14 0.02	Limited: slope (limited) large stones (slightly limited) surface stones (slightly limited)	0.99 0.24 0.09	Moderately limited: slope (moderately limited)	0.60	Moderately limited: slope (moderately limited)	0.60	Very limited: slope (very limited) slippage potential (moderately limited)	1.00 0.50
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 9a.--Forest Management--Continued

Map symbol and soil name	Hand planting		Mechanical planting		Use of harvesting equipment		Mechanical site preparation (surface)		Roads (natural surface)	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70040: Cliquot-----	Not limited		Slightly limited: slope (slightly limited)	0.10	Not limited		Not limited		Limited: slippage potential (limited)	0.90
Bolivar-----	Not limited		Slightly limited: slope (slightly limited)	0.10	Not limited		Not limited		Moderately limited: slippage potential (moderately limited)	0.50
70041: Goss-----	Slightly limited: large stones (slightly limited) small stones (slightly limited)	0.17 0.05	Moderately limited: slope (moderately limited) large stones (moderately limited) small stones (slightly limited)	0.47 0.45 0.05	Not limited		Slightly limited: large stones (slightly limited)	0.17	Limited: slope (limited)	0.76
70042: Goss-----	Limited: small stones (limited) slope (slightly limited)	0.73 0.14	Limited: slope (limited) small stones (limited)	0.99 0.73	Moderately limited: slope (moderately limited)	0.60	Limited: small stones (limited) slope (moderately limited)	0.73 0.60	Very limited: slope (very limited)	1.00
70043: Sonsac-----	Limited: large stones (limited)	0.76	Very limited: large stones >35% (very limited) slope (moderately limited)	1.00 0.34	Not limited		Limited: large stones (limited)	0.76	Moderately limited: slope (moderately limited)	0.45
Moko-----	Slightly limited: small stones (slightly limited)	0.24	Moderately limited: slope (moderately limited) small stones (slightly limited)	0.34 0.24	Not limited		Slightly limited: small stones (slightly limited)	0.01	Moderately limited: slippage potential (moderately limited) slope (moderately limited)	0.50 0.45
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 9a.--Forest Management--Continued

Map symbol and soil name	Hand planting		Mechanical planting		Use of harvesting equipment		Mechanical site preparation (surface)		Roads (natural surface)	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70044: Sonsac-----	Slightly limited: slope (slightly limited) small stones (slightly limited)	0.14 0.04	Limited: slope (limited) small stones (slightly limited)	0.99 0.04	Moderately limited: slope (moderately limited) low strength (moderately limited)	0.60 0.50	Moderately limited: slope (moderately limited)	0.60	Very limited: slope (very limited) slippage potential (moderately limited) low strength (moderately limited)	1.00 0.50 0.50
Moko-----	Slightly limited: small stones (slightly limited) slope (slightly limited)	0.17 0.14	Limited: slope (limited) small stones (slightly limited)	0.99 0.17	Moderately limited: slope (moderately limited) low strength (moderately limited)	0.60 0.50	Moderately limited: slope (moderately limited)	0.60	Very limited: slope (very limited) slippage potential (moderately limited) low strength (moderately limited)	1.00 0.50 0.50
70047: Wanda-----	Not limited		Not limited		Moderately limited: low strength (moderately limited)	0.50	Not limited		Moderately limited: low strength (moderately limited)	0.50
70048: Alsup-----	Not limited		Moderately limited: slope (moderately limited) surface stones (moderately limited)	0.47 0.38	Moderately limited: low strength (moderately limited)	0.50	Not limited		Limited: slope (limited) low strength (moderately limited)	0.76 0.50
70052: Arnica-----	Not limited		Not limited		Moderately limited: low strength (moderately limited)	0.50	Not limited		Moderately limited: low strength (moderately limited)	0.50
70053: Courtois-----	Not limited		Not limited		Moderately limited: low strength (moderately limited)	0.50	Not limited		Moderately limited: low strength (moderately limited)	0.50

Table 9a.--Forest Management--Continued

Map symbol and soil name	Hand planting		Mechanical planting		Use of harvesting equipment		Mechanical site preparation (surface)		Roads (natural surface)	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70054: Cliquot-----	Slightly limited: small stones (slightly limited)	0.08	Moderately limited: slope (moderately limited) surface stones (moderately limited) small stones (slightly limited)	0.47 0.38 0.08	Not limited		Not limited		Limited: slope (limited)	0.76
71254: Cotter-----	Not limited		Not limited		Moderately limited: low strength (moderately limited)	0.50	Not limited		Moderately limited: low strength (moderately limited)	0.50
71750: Cleora-----	Not limited		Not limited		Not limited		Not limited		Very limited: flooding (very limited)	1.00
73000: Pomme-----	Not limited		Slightly limited: slope (slightly limited)	0.10	Moderately limited: low strength (moderately limited)	0.50	Not limited		Moderately limited: slippage potential (moderately limited) low strength (moderately limited)	0.50 0.50
73003: Ocie-----	Limited: small stones (limited) slope (slightly limited)	0.94 0.14	Limited: slope (limited) small stones (limited)	0.99 0.94	Moderately limited: slope (moderately limited) seasonal wetness (slightly limited)	0.60 0.10	Limited: small stones (limited) slope (moderately limited) seasonal wetness (slightly limited)	0.95 0.60 0.10	Very limited: slope (very limited) slippage potential (moderately limited) seasonal wetness (slightly limited)	1.00 0.50 0.10
Gatewood-----	Moderately limited: small stones (moderately limited) slope (slightly limited)	0.38 0.14	Limited: slope (limited) small stones (moderately limited)	0.99 0.38	Moderately limited: slope (moderately limited) low strength (moderately limited) seasonal wetness (slightly limited)	0.60 0.50 0.23	Moderately limited: slope (moderately limited) small stones (slightly limited) seasonal wetness (slightly limited)	0.60 0.24 0.23	Very limited: slope (very limited) low strength (moderately limited) seasonal wetness (slightly limited)	1.00 0.50 0.23

Table 9a.--Forest Management--Continued

Map symbol and soil name	Hand planting		Mechanical planting		Use of harvesting equipment		Mechanical site preparation (surface)		Roads (natural surface)	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
73005: Ocie-----	Moderately limited: small stones (moderately limited)	0.42	Moderately limited: small stones (moderately limited) slope (moderately limited)	0.42 0.34	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.10	Slightly limited: small stones (slightly limited) seasonal wetness (slightly limited)	0.30 0.10	Moderately limited: slippage potential (moderately limited) low strength (moderately limited) slope (moderately limited)	0.50 0.50 0.45
73007: Plato-----	Not limited		Not limited		Moderately limited: low strength (moderately limited) seasonal wetness (moderately limited)	0.50 0.34	Moderately limited: seasonal wetness (moderately limited)	0.34	Moderately limited: low strength (moderately limited) seasonal wetness (moderately limited)	0.50 0.34
73008: Viraton-----	Not limited		Not limited		Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.26	Slightly limited: seasonal wetness (slightly limited)	0.26	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.26
73059: Pomme-----	Not limited		Not limited		Moderately limited: low strength (moderately limited)	0.50	Not limited		Moderately limited: slippage potential (moderately limited) low strength (moderately limited)	0.50 0.50
73075: Hobson-----	Not limited		Not limited		Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.15	Slightly limited: seasonal wetness (slightly limited)	0.15	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.15
74625: Hartville-----	Not limited		Slightly limited: slope (slightly limited)	0.10	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.26	Slightly limited: seasonal wetness (slightly limited)	0.26	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.26

Table 9a.--Forest Management--Continued

Map symbol and soil name	Hand planting		Mechanical planting		Use of harvesting equipment		Mechanical site preparation (surface)		Roads (natural surface)	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
74641: Secesh-----	Not limited		Not limited		Moderately limited: low strength (moderately limited)	0.50	Not limited		Moderately limited: flooding (moderately limited) low strength (moderately limited)	0.60 0.50
75375: Horsecreek----	Not limited		Not limited		Moderately limited: low strength (moderately limited)	0.50	Not limited		Moderately limited: flooding (moderately limited) low strength (moderately limited)	0.60 0.50
75377: Racket-----	Not limited		Not limited		Moderately limited: low strength (moderately limited)	0.50	Not limited		Very limited: flooding (very limited) low strength (moderately limited)	1.00 0.50
75378: Sturkie-----	Not limited		Not limited		Moderately limited: low strength (moderately limited)	0.50	Not limited		Very limited: flooding (very limited) low strength (moderately limited)	1.00 0.50
99000: Pits, quarries	Not rated		Not rated		Not rated		Not rated		Not rated	
99001: Water-----	Not rated		Not rated		Not rated		Not rated		Not rated	
99004: Kanima-----	Moderately limited: small stones (moderately limited) slope (slightly limited)	0.60 0.19	Very limited: slope (very limited) small stones (moderately limited)	1.00 0.60	Limited: slope (limited)	0.76	Limited: slope (limited) small stones (moderately limited)	0.76 0.60	Very limited: slope (very limited)	1.00
99007: Dam-----	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 9b.--Forest Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Erosion on roads and trails		Off-road or off-trail erosion		Soil rutting		Log landings		Seedling survival	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
40000: Barden-----	Slightly limited: slope/erodibility (slightly limited)	0.22	Slightly limited: slope/erodibility (slightly limited)	0.05	Limited: low strength (limited) seasonal wetness (slightly limited)	0.80 0.10	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.10	Not limited	
40001: Bolivar-----	Limited: slope/erodibility (limited)	0.67	Slightly limited: slope/erodibility (slightly limited)	0.12	Limited: low strength (limited)	0.80	Moderately limited: low strength (moderately limited)	0.50	Not limited	
40004: Barden-----	Moderately limited: slope/erodibility (moderately limited)	0.44	Slightly limited: slope/erodibility (slightly limited)	0.10	Limited: low strength (limited) seasonal wetness (slightly limited)	0.80 0.10	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.10	Not limited	
40005: Sylvania-----	Very limited: slope/erodibility (very limited)	1.00	Slightly limited: slope/erodibility (slightly limited)	0.20	Limited: low strength (limited)	0.80	Limited: slippage potential (limited) slope (moderately limited) low strength (moderately limited)	0.90 0.60 0.50	Not limited	
40006: Barco-----	Moderately limited: slope/erodibility (moderately limited)	0.44	Slightly limited: slope/erodibility (slightly limited)	0.08	Limited: low strength (limited)	0.80	Moderately limited: low strength (moderately limited)	0.50	Not limited	
Sylvania-----	Moderately limited: slope/erodibility (moderately limited)	0.44	Slightly limited: slope/erodibility (slightly limited)	0.08	Limited: low strength (limited)	0.80	Moderately limited: low strength (moderately limited)	0.50	Not limited	

Table 9b.--Forest Management--Continued

Map symbol and soil name	Erosion on roads and trails		Off-road or off-trail erosion		Soil rutting		Log landings		Seedling survival	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
40007: Eldorado-----	Moderately limited: slope/erodibility (moderately limited)	0.56	Slightly limited: slope/erodibility (slightly limited)	0.18	Moderately limited: low strength (moderately limited)	0.50	Moderately limited: slope (moderately limited)	0.45	Not limited	
40008: Parsons-----	Slightly limited: slope/erodibility (slightly limited)	0.11	Slightly limited: slope/erodibility (slightly limited)	0.02	Limited: low strength (limited) seasonal wetness (moderately limited)	0.80 0.60	Moderately limited: seasonal wetness (moderately limited) slippage potential (moderately limited) low strength (moderately limited)	0.60 0.50 0.50	Moderately limited: seasonal wetness (moderately limited)	0.60
40009: Sylvania-----	Moderately limited: slope/erodibility (moderately limited)	0.44	Slightly limited: slope/erodibility (slightly limited)	0.14	Limited: low strength (limited)	0.80	Limited: slippage potential (limited) low strength (moderately limited) slope (slightly limited)	0.90 0.50 0.15	Not limited	
40010: Collinsville--	Moderately limited: slope/erodibility (moderately limited)	0.56	Slightly limited: slope/erodibility (slightly limited)	0.18	Moderately limited: low strength (moderately limited)	0.50	Moderately limited: slope (moderately limited)	0.45	Slightly limited: droughty (slightly limited)	0.18
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	
44001: Quarles-----	Slightly limited: slope/erodibility (slightly limited)	0.11	Slightly limited: slope/erodibility (slightly limited)	0.02	Limited: low strength (limited) seasonal wetness (limited)	0.80 0.76	Limited: seasonal wetness (limited) low strength (moderately limited)	0.76 0.50	Limited: seasonal wetness (limited)	0.76

Table 9b.--Forest Management--Continued

Map symbol and soil name	Erosion on roads and trails		Off-road or off-trail erosion		Soil rutting		Log landings		Seedling survival	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
46000: Humansville---	Slightly limited: slope/erodibility (slightly limited)	0.11	Slightly limited: slope/erodibility (slightly limited)	0.02	Limited: seasonal wetness (limited) low strength (limited)	0.81 0.80	Very limited: flooding (very limited) seasonal wetness (limited) low strength (moderately limited)	1.00 0.81 0.50	Limited: flooding (limited) seasonal wetness (limited)	0.90 0.81
66000: Moniteau-----	Slightly limited: slope/erodibility (slightly limited)	0.11	Slightly limited: slope/erodibility (slightly limited)	0.02	Limited: seasonal wetness (limited) low strength (limited)	0.91 0.80	Limited: seasonal wetness (limited) flooding (moderately limited) low strength (moderately limited)	0.91 0.60 0.50	Limited: seasonal wetness (limited) flooding (moderately limited)	0.91 0.60
66001: Dameron-----	Slightly limited: slope/erodibility (slightly limited)	0.11	Slightly limited: slope/erodibility (slightly limited)	0.02	Limited: low strength (limited)	0.80	Very limited: flooding (very limited) low strength (moderately limited)	1.00 0.50	Limited: flooding (limited)	0.90
70000: Bona-----	Moderately limited: slope/erodibility (moderately limited)	0.38	Slightly limited: slope/erodibility (slightly limited)	0.12	Limited: low strength (limited)	0.80	Moderately limited: low strength (moderately limited)	0.50	Not limited	
70001: Bona-----	Limited: slope/erodibility (limited)	0.75	Slightly limited: slope/erodibility (slightly limited)	0.24	Limited: low strength (limited)	0.80	Limited: slope (limited) low strength (moderately limited)	0.76 0.50	Not limited	
70002: Alsup-----	Limited: slope/erodibility (limited)	0.67	Slightly limited: slope/erodibility (slightly limited)	0.15	Limited: low strength (limited)	0.80	Moderately limited: low strength (moderately limited)	0.50	Not limited	

Table 9b.--Forest Management--Continued

Map symbol and soil name	Erosion on roads and trails		Off-road or off-trail erosion		Soil rutting		Log landings		Seedling survival	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70003: Alsup-----	Very limited: slope/erodibility (very limited)	1.00	Slightly limited: slope/erodibility (slightly limited)	0.24	Limited: low strength (limited)	0.80	Limited: slope (limited) low strength (moderately limited)	0.76 0.50	Not limited	
70004: Alsup-----	Very limited: slope/erodibility (very limited)	1.00	Moderately limited: slope/erodibility (moderately limited)	0.49	Limited: low strength (limited)	0.80	Very limited: slope (very limited) low strength (moderately limited)	1.00 0.50	Not limited	
70006: Crelton-----	Slightly limited: slope/erodibility (slightly limited)	0.22	Slightly limited: slope/erodibility (slightly limited)	0.04	Limited: low strength (limited) seasonal wetness (slightly limited)	0.80 0.15	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.15	Not limited	
70007: Cliquot-----	Limited: slope/erodibility (limited)	0.75	Slightly limited: slope/erodibility (slightly limited)	0.24	Moderately limited: low strength (moderately limited)	0.50	Limited: slope (limited)	0.76	Not limited	
70008: Goss-----	Limited: slope/erodibility (limited)	0.67	Slightly limited: slope/erodibility (slightly limited)	0.12	Limited: low strength (limited)	0.80	Moderately limited: low strength (moderately limited)	0.50	Slightly limited: droughty (slightly limited)	0.01
70009: Goss-----	Moderately limited: slope/erodibility (moderately limited)	0.46	Slightly limited: slope/erodibility (slightly limited)	0.24	Limited: low strength (limited)	0.80	Limited: slope (limited) low strength (moderately limited)	0.76 0.50	Slightly limited: droughty (slightly limited)	0.06
70010: Goss-----	Limited: slope/erodibility (limited)	0.96	Moderately limited: slope/erodibility (moderately limited)	0.49	Not limited		Very limited: slope (very limited)	1.00	Moderately limited: droughty (moderately limited)	0.39

Table 9b.--Forest Management--Continued

Map symbol and soil name	Erosion on roads and trails		Off-road or off-trail erosion		Soil rutting		Log landings		Seedling survival	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70011: Goss-----	Very limited: slope/erodibility (very limited)	1.00	Moderately limited: slope/erodibility (moderately limited)	0.49	Not limited		Very limited: slope (very limited)	1.00	Moderately limited: droughty (moderately limited)	0.31
Moko-----	Moderately limited: slope/erodibility (moderately limited)	0.35	Slightly limited: slope/erodibility (slightly limited)	0.18	Limited: low strength (limited)	0.80	Moderately limited: slippage potential (moderately limited) low strength (moderately limited) slope (moderately limited)	0.50 0.50 0.45	Limited: droughty (limited)	0.90
70012: Hoberg-----	Moderately limited: slope/erodibility (moderately limited)	0.44	Slightly limited: slope/erodibility (slightly limited)	0.08	Limited: low strength (limited) seasonal wetness (slightly limited)	0.80 0.20	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.20	Not limited	
70014: Moko-----	Very limited: slope/erodibility (very limited)	1.00	Moderately limited: slope/erodibility (moderately limited)	0.49	Not limited		Very limited: slope (very limited) slippage potential (moderately limited)	1.00 0.50	Limited: droughty (limited)	0.82
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	
70040: Cliquot-----	Limited: slope/erodibility (limited)	0.67	Slightly limited: slope/erodibility (slightly limited)	0.12	Moderately limited: low strength (moderately limited)	0.50	Limited: slippage potential (limited)	0.90	Not limited	
Bolivar-----	Limited: slope/erodibility (limited)	0.67	Slightly limited: slope/erodibility (slightly limited)	0.12	Moderately limited: low strength (moderately limited)	0.50	Moderately limited: slippage potential (moderately limited)	0.50	Not limited	
70041: Goss-----	Moderately limited: slope/erodibility (moderately limited)	0.46	Slightly limited: slope/erodibility (slightly limited)	0.24	Not limited		Limited: slope (limited)	0.76	Not limited	

Table 9b.--Forest Management--Continued

Map symbol and soil name	Erosion on roads and trails		Off-road or off-trail erosion		Soil rutting		Log landings		Seedling survival	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70042: Goss-----	Very limited: slope/erodibility (very limited)	1.00	Moderately limited: slope/erodibility (moderately limited)	0.49	Not limited		Very limited: slope (very limited)	1.00	Slightly limited: droughty (slightly limited)	0.04
70043: Sonsac-----	Moderately limited: slope/erodibility (moderately limited)	0.56	Slightly limited: slope/erodibility (slightly limited)	0.18	Not limited		Moderately limited: slope (moderately limited)	0.45	Not limited	
Moko-----	Moderately limited: slope/erodibility (moderately limited)	0.56	Slightly limited: slope/erodibility (slightly limited)	0.18	Not limited		Moderately limited: slippage potential (moderately limited) slope (moderately limited)	0.50 0.45	Limited: droughty (limited)	0.88
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	
70044: Sonsac-----	Very limited: slope/erodibility (very limited)	1.00	Moderately limited: slope/erodibility (moderately limited)	0.49	Limited: low strength (limited)	0.80	Very limited: slope (very limited) slippage potential (moderately limited) low strength (moderately limited)	1.00 0.50 0.50	Not limited	
Moko-----	Very limited: slope/erodibility (very limited)	1.00	Moderately limited: slope/erodibility (moderately limited)	0.49	Limited: low strength (limited)	0.80	Very limited: slope (very limited) slippage potential (moderately limited) low strength (moderately limited)	1.00 0.50 0.50	Slightly limited: droughty (slightly limited)	0.17
70047: Wanda-----	Moderately limited: slope/erodibility (moderately limited)	0.44	Slightly limited: slope/erodibility (slightly limited)	0.10	Limited: low strength (limited)	0.80	Moderately limited: low strength (moderately limited)	0.50	Not limited	
70048: Alsop-----	Very limited: slope/erodibility (very limited)	1.00	Slightly limited: slope/erodibility (slightly limited)	0.29	Limited: low strength (limited)	0.80	Limited: slope (limited) low strength (moderately limited)	0.76 0.50	Not limited	

Table 9b.--Forest Management--Continued

Map symbol and soil name	Erosion on roads and trails		Off-road or off-trail erosion		Soil rutting		Log landings		Seedling survival	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70052: Arnica-----	Moderately limited: slope/erodibility (moderately limited)	0.44	Slightly limited: slope/erodibility (slightly limited)	0.08	Limited: low strength (limited)	0.80	Moderately limited: low strength (moderately limited)	0.50	Not limited	
70053: Courtois-----	Moderately limited: slope/erodibility (moderately limited)	0.44	Slightly limited: slope/erodibility (slightly limited)	0.08	Limited: low strength (limited)	0.80	Moderately limited: low strength (moderately limited)	0.50	Not limited	
70054: Cliquot-----	Moderately limited: slope/erodibility (moderately limited)	0.46	Slightly limited: slope/erodibility (slightly limited)	0.24	Moderately limited: low strength (moderately limited)	0.50	Limited: slope (limited)	0.76	Not limited	
71254: Cotter-----	Slightly limited: slope/erodibility (slightly limited)	0.11	Slightly limited: slope/erodibility (slightly limited)	0.02	Limited: low strength (limited)	0.80	Moderately limited: low strength (moderately limited)	0.50	Not limited	
71750: Cleora-----	Slightly limited: slope/erodibility (slightly limited)	0.11	Slightly limited: slope/erodibility (slightly limited)	0.02	Moderately limited: low strength (moderately limited)	0.50	Very limited: flooding (very limited)	1.00	Limited: flooding (limited)	0.90
73000: Pomme-----	Limited: slope/erodibility (limited)	0.67	Slightly limited: slope/erodibility (slightly limited)	0.12	Limited: low strength (limited)	0.80	Moderately limited: slippage potential (moderately limited) low strength (moderately limited)	0.50 0.50	Not limited	
73003: Ocie-----	Very limited: slope/erodibility (very limited)	1.00	Moderately limited: slope/erodibility (moderately limited)	0.49	Slightly limited: seasonal wetness (slightly limited)	0.10	Very limited: slope (very limited) slippage potential (moderately limited) seasonal wetness (slightly limited)	1.00 0.50 0.10	Slightly limited: droughty (slightly limited)	0.01

Table 9b.--Forest Management--Continued

Map symbol and soil name	Erosion on roads and trails		Off-road or off-trail erosion		Soil rutting		Log landings		Seedling survival	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
73003: Gatewood-----	Very limited: slope/erodibility (very limited)	1.00	Moderately limited: slope/erodibility (moderately limited)	0.49	Limited: low strength (limited) seasonal wetness (slightly limited)	0.80 0.23	Very limited: slope (very limited) low strength (moderately limited) seasonal wetness (slightly limited)	1.00 0.50 0.23	Not limited	
73005: Ocie-----	Moderately limited: slope/erodibility (moderately limited)	0.56	Slightly limited: slope/erodibility (slightly limited)	0.18	Limited: low strength (limited) seasonal wetness (slightly limited)	0.80 0.10	Moderately limited: slippage potential (moderately limited) low strength (moderately limited) slope (moderately limited)	0.50 0.50 0.45	Not limited	
73007: Plato-----	Slightly limited: slope/erodibility (slightly limited)	0.22	Slightly limited: slope/erodibility (slightly limited)	0.05	Limited: low strength (limited) seasonal wetness (moderately limited)	0.80 0.34	Moderately limited: low strength (moderately limited) seasonal wetness (moderately limited)	0.50 0.34	Slightly limited: seasonal wetness (slightly limited)	0.11
73008: Viraton-----	Moderately limited: slope/erodibility (moderately limited)	0.44	Slightly limited: slope/erodibility (slightly limited)	0.10	Limited: low strength (limited) seasonal wetness (slightly limited)	0.80 0.26	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.26	Not limited	
73059: Pomme-----	Slightly limited: slope/erodibility (slightly limited)	0.22	Slightly limited: slope/erodibility (slightly limited)	0.05	Limited: low strength (limited)	0.80	Moderately limited: slippage potential (moderately limited) low strength (moderately limited)	0.50 0.50	Not limited	
73075: Hobson-----	Slightly limited: slope/erodibility (slightly limited)	0.22	Slightly limited: slope/erodibility (slightly limited)	0.05	Limited: low strength (limited) seasonal wetness (slightly limited)	0.80 0.15	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.15	Not limited	

Table 9b.--Forest Management--Continued

Map symbol and soil name	Erosion on roads and trails		Off-road or off-trail erosion		Soil rutting		Log landings		Seedling survival	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
74625: Hartville-----	Limited: slope/erodibility (limited)	0.67	Slightly limited: slope/erodibility (slightly limited)	0.15	Limited: low strength (limited) seasonal wetness (slightly limited)	0.80 0.26	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.26	Not limited	
74641: Secesh-----	Slightly limited: slope/erodibility (slightly limited)	0.11	Slightly limited: slope/erodibility (slightly limited)	0.02	Limited: low strength (limited)	0.80	Moderately limited: flooding (moderately limited) low strength (moderately limited)	0.60 0.50	Moderately limited: flooding (moderately limited)	0.60
75375: Horsecreek----	Slightly limited: slope/erodibility (slightly limited)	0.11	Slightly limited: slope/erodibility (slightly limited)	0.02	Limited: low strength (limited)	0.80	Moderately limited: flooding (moderately limited) low strength (moderately limited)	0.60 0.50	Moderately limited: flooding (moderately limited)	0.60
75377: Racket-----	Slightly limited: slope/erodibility (slightly limited)	0.22	Slightly limited: slope/erodibility (slightly limited)	0.04	Limited: low strength (limited)	0.80	Very limited: flooding (very limited) low strength (moderately limited)	1.00 0.50	Limited: flooding (limited)	0.90
75378: Sturkie-----	Slightly limited: slope/erodibility (slightly limited)	0.11	Slightly limited: slope/erodibility (slightly limited)	0.02	Limited: low strength (limited)	0.80	Very limited: flooding (very limited) low strength (moderately limited)	1.00 0.50	Limited: flooding (limited)	0.90
99000: Pits, quarries	Not rated		Not rated		Not rated		Not rated		Not rated	
99001: Water-----	Not rated		Not rated		Not rated		Not rated		Not rated	
99004: Kanima-----	Very limited: slope/erodibility (very limited)	1.00	Moderately limited: slope/erodibility (moderately limited)	0.57	Not limited		Very limited: slope (very limited)	1.00	Slightly limited: droughty (slightly limited)	0.03

Table 9b.--Forest Management--Continued

Map symbol and soil name	Erosion on roads and trails		Off-road or off-trail erosion		Soil rutting		Log landings		Seedling survival	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
99007: Dam-----	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 10.--Windbreaks and Environmental Plantings

(Only the soils suitable for windbreaks and environmental plantings are listed. Absence of an entry indicates that trees generally do not grow to the given height)

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
40000: Barden-----	Common ninebark; fragrant sumac	Amur maple; gray dogwood; possumhaw	Eastern redcedar----	Austrian pine; common hackberry; honeylocust; Norway spruce; pin oak	---
40001: Bolivar-----	American plum; common lilac; fragrant sumac	Gray dogwood; Washington hawthorn	Austrian pine; black oak; common hackberry; eastern redcedar; white ash	Shortleaf pine-----	---
40004: Barden-----	Common ninebark; fragrant sumac	Amur maple; gray dogwood; possumhaw	Eastern redcedar----	Austrian pine; common hackberry; honeylocust; Norway spruce; pin oak	---
40005: Sylvania-----	Common ninebark; fragrant sumac	Amur maple; gray dogwood; possumhaw	Eastern redcedar----	Austrian pine; common hackberry; honeylocust; Norway spruce; pin oak	---
40006: Barco-----	American plum; common lilac; fragrant sumac	Gray dogwood; Washington hawthorn	Austrian pine; black oak; common hackberry; eastern redcedar; white ash	Shortleaf pine-----	---
Sylvania-----	Common ninebark; fragrant sumac	Amur maple; gray dogwood; possumhaw	Eastern redcedar----	Austrian pine; common hackberry; honeylocust; Norway spruce; pin oak	---
40007: Eldorado-----	American plum; common lilac; fragrant sumac	Amur maple; gray dogwood; Washington hawthorn	Austrian pine; common hackberry; eastern redcedar; honeylocust; Virginia pine	---	---

Table 10.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
40008: Parsons-----	Common ninebark; fragrant sumac	Amur maple; gray dogwood; possumhaw	Eastern redcedar----	Austrian pine; common hackberry; honeylocust; Norway spruce; pin oak	---
40009: Sylvania-----	Common ninebark; fragrant sumac	Amur maple; gray dogwood; possumhaw	Eastern redcedar----	Austrian pine; common hackberry; honeylocust; Norway spruce; pin oak	---
44001: Quarles-----	Common buttonbush----	Possumhaw-----	Eastern arborvitae; eastern redcedar; nannyberry	Baldcypress; common hackberry; pin oak	Eastern cottonwood
46000: Humansville-----	Common buttonbush----	Possumhaw-----	Eastern arborvitae; eastern redcedar; nannyberry	Baldcypress; common hackberry; pin oak	Eastern cottonwood
66000: Moniteau-----	Common buttonbush----	Possumhaw-----	Eastern arborvitae; eastern redcedar; nannyberry	Baldcypress; common hackberry; pin oak	Eastern cottonwood
66001: Dameron-----	Common ninebark----	Blackhaw; gray dogwood	Eastern redcedar; nannyberry; Washington hawthorn	Baldcypress; common hackberry; green ash; pin oak; sweetgum	Eastern cottonwood; eastern white pine
70000: Bona-----	Common ninebark; fragrant sumac	Amur maple; gray dogwood; possumhaw	Eastern redcedar----	Austrian pine; common hackberry; honeylocust; Norway spruce; pin oak	---
70001: Bona-----	Common ninebark; fragrant sumac	Amur maple; gray dogwood; possumhaw	Eastern redcedar----	Austrian pine; common hackberry; honeylocust; Norway spruce; pin oak	---
70002: Alsop-----	Fragrant sumac-----	American plum; gray dogwood; southern arrowwood	Eastern redbud; eastern redcedar; Washington hawthorn	Eastern white pine; green ash; northern red oak; tuliptree	---

Table 10.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
70003: Alsup-----	Fragrant sumac-----	American plum; gray dogwood; southern arrowwood	Eastern redbud; eastern redcedar; Washington hawthorn	Eastern white pine; green ash; northern red oak; tuliptree	---
70004: Alsup-----	Fragrant sumac-----	American plum; gray dogwood; southern arrowwood	Eastern redbud; eastern redcedar; Washington hawthorn	Eastern white pine; green ash; northern red oak; tuliptree	---
70006: Crelton-----	American plum; common lilac; fragrant sumac	Amur maple; gray dogwood; Washington hawthorn	Austrian pine; common hackberry; eastern redcedar; honeylocust; Virginia pine	---	---
70007: Cliquot-----	Common ninebark; fragrant sumac	Amur maple; gray dogwood; possumhaw	Eastern redcedar----	Austrian pine; common hackberry; honeylocust; Norway spruce; pin oak	---
70008: Goss-----	Coralberry; fragrant sumac	American plum; gray dogwood; southern arrowwood	Eastern redbud; eastern redcedar; Washington hawthorn	Eastern white pine; northern red oak; white ash	---
70009: Goss-----	Coralberry; fragrant sumac	American plum; gray dogwood; southern arrowwood	Eastern redbud; eastern redcedar; Washington hawthorn	Eastern white pine; northern red oak; white ash	---
70010: Goss-----	Coralberry; fragrant sumac	American plum; gray dogwood; southern arrowwood	Eastern redbud; eastern redcedar; Washington hawthorn	Eastern white pine; northern red oak; white ash	---
70011: Goss-----	American plum; common lilac; fragrant sumac	Gray dogwood; Washington hawthorn	Austrian pine; black oak; common hackberry; eastern redcedar; white ash	Shortleaf pine-----	---
Moko.					

Table 10.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
70012: Hoberg-----	American cranberrybush; American plum; common juniper; coralberry; roughleaf dogwood	Common serviceberry; eastern redcedar; smooth sumac; Washington hawthorn	Black oak; blackgum; common hackberry; shortleaf pine; Virginia pine	---	---
70040: Cliquot-----	Common ninebark; fragrant sumac	Amur maple; gray dogwood; possumhaw	Eastern redcedar----	Austrian pine; common hackberry; honeylocust; Norway spruce; pin oak	---
Bolivar-----	American plum; common lilac; fragrant sumac	Gray dogwood; Washington hawthorn	Austrian pine; black oak; common hackberry; eastern redcedar; white ash	Shortleaf pine-----	---
70041: Goss-----	Coralberry; fragrant sumac	American plum; gray dogwood; southern arrowwood	Eastern redbud; eastern redcedar; Washington hawthorn	Eastern white pine; northern red oak; white ash	---
70042: Goss-----	Coralberry; fragrant sumac	American plum; gray dogwood; southern arrowwood	Eastern redbud; eastern redcedar; Washington hawthorn	Eastern white pine; northern red oak; white ash	---
70043: Sonsac-----	American plum; common lilac; fragrant sumac	Amur maple; gray dogwood; Washington hawthorn	Austrian pine; common hackberry; eastern redcedar; honeylocust; Virginia pine	---	---
Moko.					
Rock outcrop.					
70044: Sonsac-----	American plum; common lilac; fragrant sumac	Amur maple; gray dogwood; Washington hawthorn	Austrian pine; common hackberry; eastern redcedar; honeylocust; Virginia pine	---	---
Moko.					

Table 10.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
70047: Wanda-----	Fragrant sumac-----	American plum; gray dogwood; southern arrowwood	Eastern redbud; eastern redcedar; Washington hawthorn	Green ash; northern red oak; tuliptree; white fir	Eastern white pine
70048: Alsup-----	Fragrant sumac-----	American plum; gray dogwood; southern arrowwood	Eastern redbud; eastern redcedar; Washington hawthorn	Green ash; northern red oak; tuliptree	---
70052: Arnica-----	Fragrant sumac-----	American plum; gray dogwood; southern arrowwood	Eastern redbud; eastern redcedar; Washington hawthorn	Green ash; northern red oak; tuliptree	Eastern white pine
70053: Courtois-----	Fragrant sumac-----	American plum; gray dogwood; southern arrowwood	Eastern redbud; eastern redcedar; Washington hawthorn	Green ash; northern red oak; tuliptree	Eastern white pine
70054: Cliquot-----	Common ninebark; fragrant sumac	Amur maple; gray dogwood; possumhaw	Eastern redcedar----	Austrian pine; common hackberry; honeylocust; Norway spruce; pin oak	---
71254: Cotter-----	Fragrant sumac-----	American plum; gray dogwood; southern arrowwood	Eastern redbud; eastern redcedar; Washington hawthorn	Green ash; northern red oak; tuliptree	Eastern white pine
71750: Cleora-----	American plum; fragrant sumac	Blackhaw; gray dogwood	Eastern redcedar; nannyberry; Washington hawthorn	Baldcypress; common hackberry; green ash; pin oak; sweetgum	Eastern cottonwood; eastern white pine
73000: Pomme-----	American plum; common lilac; fragrant sumac	Gray dogwood; Washington hawthorn	Austrian pine; black oak; common hackberry; eastern redcedar; white ash	Shortleaf pine-----	---
73003: Ocie-----	Fragrant sumac-----	American plum; gray dogwood; southern arrowwood	Eastern redbud; eastern redcedar; Washington hawthorn	Eastern white pine; green ash; northern red oak; tuliptree	---

Table 10.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
73003: Gateway-----	American plum; common lilac; fragrant sumac	Amur maple; gray dogwood; Washington hawthorn	Austrian pine; common hackberry; eastern redcedar; honeylocust; Virginia pine	---	---
73005: Ocie-----	Fragrant sumac-----	American plum; gray dogwood; southern arrowwood	Eastern redbud; eastern redcedar; Washington hawthorn	Eastern white pine; green ash; northern red oak; tuliptree	---
73007: Plato-----	Common ninebark; fragrant sumac	Amur maple; gray dogwood; possumhaw	Eastern redcedar----	Austrian pine; common hackberry; honeylocust; Norway spruce; pin oak	---
73008: Viraton-----	American plum; common lilac; fragrant sumac	Amur maple; gray dogwood; Washington hawthorn	Austrian pine; common hackberry; eastern redcedar; honeylocust; Virginia pine	---	---
73059: Pomme-----	American plum; common lilac; fragrant sumac	Gray dogwood; Washington hawthorn	Austrian pine; black oak; common hackberry; eastern redcedar; white ash	Shortleaf pine-----	---
73075: Hobson-----	American cranberrybush; American plum; common juniper; coralberry; roughleaf dogwood	Common serviceberry; eastern redcedar; smooth sumac; Washington hawthorn	Black oak; blackgum; common hackberry; shortleaf pine; Virginia pine	---	---
74625: Hartville-----	Common ninebark; fragrant sumac	Amur maple; gray dogwood; possumhaw	Eastern redcedar----	Austrian pine; common hackberry; honeylocust; Norway spruce; pin oak	---

Table 10.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
74641: Secesh-----	Fragrant sumac-----	American plum; gray dogwood; southern arrowwood	Eastern redbud; eastern redcedar; Washington hawthorn	Green ash; northern red oak; tuliptree; white fir	---
75375: Horsecreek-----	Silky dogwood-----	Blackhaw; gray dogwood	Eastern redcedar; nannyberry; Washington hawthorn	Baldcypress; common hackberry; green ash; pin oak; sweetgum	Eastern cottonwood; eastern white pine
75377: Racket-----	Silky dogwood-----	Blackhaw; gray dogwood	Eastern redcedar; nannyberry; Washington hawthorn	Baldcypress; common hackberry; green ash; pin oak; sweetgum	Eastern cottonwood; eastern white pine
75378: Sturkie-----	Silky dogwood-----	Blackhaw; gray dogwood	Eastern redcedar; nannyberry; Washington hawthorn	Baldcypress; common hackberry; green ash; pin oak; sweetgum	Eastern cottonwood; eastern white pine

Table 11.--Recreational Site Development

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds		Paths and trails	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
40000: Barden-----	Moderately limited: percs slowly (moderately limited)	0.39	Moderately limited: percs slowly (moderately limited)	0.39	Moderately limited: percs slowly (moderately limited)	0.39	Not limited	
40001: Bolivar-----	Not limited		Not limited		Limited: slope (limited) depth to bedrock (slightly limited)	0.98 0.06	Not limited	
40004: Barden-----	Moderately limited: percs slowly (moderately limited)	0.39	Moderately limited: percs slowly (moderately limited)	0.39	Moderately limited: slope (moderately limited) percs slowly (moderately limited)	0.40 0.39	Not limited	
40005: Sylvania-----	Limited: large surface stones (limited) too acid (slightly limited) slope (slightly limited)	0.70 0.18 0.16	Limited: large surface stones (limited) too acid (slightly limited) slope (slightly limited)	0.70 0.18 0.16	Very limited: slope (very limited) small stones (limited) too acid (slightly limited)	1.00 0.63 0.18	Limited: large surface stones (limited)	0.70
40006: Barco-----	Not limited		Not limited		Moderately limited: slope (moderately limited) depth to bedrock (slightly limited)	0.40 0.27	Not limited	
Sylvania-----	Slightly limited: percs slowly (slightly limited)	0.17	Slightly limited: percs slowly (slightly limited)	0.17	Moderately limited: slope (moderately limited) percs slowly (slightly limited)	0.40 0.17	Not limited	

Table 11.--Recreational Site Development--Continued

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds		Paths and trails	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
40007: Eldorado-----	Limited: large surface stones (limited) small stones (slightly limited) slope (slightly limited)	0.70 0.27 0.04	Limited: large surface stones (limited) small stones (slightly limited) slope (slightly limited)	0.70 0.27 0.04	Very limited: small stones (very limited) slope (very limited) large stones (slightly limited)	1.00 1.00 0.18	Limited: large surface stones (limited)	0.70
40008: Parsons-----	Very limited: wetness (very limited) percs slowly (very limited)	1.00 1.00	Very limited: percs slowly (very limited) wetness (limited)	1.00 0.99	Very limited: wetness (very limited) percs slowly (very limited)	1.00 1.00	Limited: wetness (limited)	0.99
40009: Sylvania-----	Slightly limited: percs slowly (slightly limited)	0.13	Slightly limited: percs slowly (slightly limited)	0.13	Very limited: slope (very limited) small stones (moderately limited) percs slowly (slightly limited)	1.00 0.31 0.13	Not limited	
40010: Collinsville-----	Limited: shallow to bedrock (limited) slope (slightly limited)	0.90 0.04	Limited: shallow to bedrock (limited) slope (slightly limited)	0.90 0.04	Very limited: shallow to bedrock (very limited) slope (very limited) small stones (moderately limited)	1.00 1.00 0.31	Not limited	
Rock outcrop-----	Not rated		Not rated		Not rated		Not rated	
44001: Quarles-----	Very limited: wetness (very limited) flooding (rare) (limited) percs slowly (moderately limited)	1.00 0.90 0.39	Very limited: wetness (very limited) percs slowly (moderately limited)	1.00 0.39	Very limited: wetness (very limited) percs slowly (moderately limited)	1.00 0.39	Very limited: wetness (very limited)	1.00

Table 11.--Recreational Site Development--Continued

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds		Paths and trails	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
46000: Humansville-----	Very limited: flooding (very limited) wetness (very limited) percs slowly (slightly limited)	1.00 1.00 0.26	Very limited: wetness (very limited) flooding (moderately limited) percs slowly (slightly limited)	1.00 0.60 0.26	Very limited: flooding (very limited) wetness (very limited) percs slowly (slightly limited)	1.00 1.00 0.26	Very limited: wetness (very limited) flooding (moderately limited)	1.00 0.60
66000: Moniteau-----	Very limited: flooding (very limited) wetness (very limited) percs slowly (slightly limited)	1.00 1.00 0.13	Very limited: wetness (very limited) percs slowly (slightly limited)	1.00 0.13	Very limited: wetness (very limited) flooding (moderately limited) percs slowly (slightly limited)	1.00 0.60 0.13	Very limited: wetness (very limited)	1.00
66001: Dameron-----	Very limited: flooding (very limited) small stones (very limited)	1.00 1.00	Very limited: small stones (very limited) flooding (moderately limited)	1.00 0.60	Very limited: flooding (very limited) small stones (very limited)	1.00 1.00	Very limited: small stones (limited) flooding (moderately limited)	1.00 0.60
70000: Bona-----	Moderately limited: small stones (moderately limited) percs slowly (slightly limited)	0.40 0.13	Moderately limited: small stones (moderately limited) percs slowly (slightly limited)	0.40 0.13	Very limited: small stones (very limited) slope (limited) percs slowly (slightly limited)	1.00 0.98 0.13	Not limited	
70001: Bona-----	Limited: small stones (limited) slope (limited) percs slowly (slightly limited)	0.75 0.63 0.13	Limited: small stones (limited) slope (limited) percs slowly (slightly limited)	0.75 0.63 0.13	Very limited: slope (very limited) small stones (very limited) percs slowly (slightly limited)	1.00 1.00 0.13	Not limited	

Table 11.--Recreational Site Development--Continued

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds		Paths and trails	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70002: Alsup-----	Moderately limited: small stones (moderately limited) percs slowly (slightly limited)	0.36 0.13	Moderately limited: small stones (moderately limited) percs slowly (slightly limited)	0.36 0.13	Very limited: small stones (very limited) slope (limited) percs slowly (slightly limited)	1.00 0.98 0.13	Not limited	
70003: Alsup-----	Limited: slope (limited) small stones (moderately limited) percs slowly (slightly limited)	0.63 0.40 0.13	Limited: slope (limited) small stones (moderately limited) percs slowly (slightly limited)	0.63 0.40 0.13	Very limited: slope (very limited) small stones (very limited) percs slowly (slightly limited)	1.00 1.00 0.13	Not limited	
70004: Alsup-----	Very limited: slope (very limited) large surface stones (moderately limited) percs slowly (slightly limited)	1.00 0.60 0.13	Very limited: slope (very limited) large surface stones (moderately limited) percs slowly (slightly limited)	1.00 0.60 0.13	Very limited: slope (very limited) small stones (moderately limited) percs slowly (slightly limited)	1.00 0.36 0.13	Limited: slope (limited) large surface stones (moderately limited)	0.92 0.60
70006: Crelton-----	Very limited: percs slowly (very limited) wetness (moderately limited)	1.00 0.35	Very limited: percs slowly (very limited) wetness (slightly limited)	1.00 0.13	Very limited: percs slowly (very limited) wetness (moderately limited) small stones (slightly limited)	1.00 0.35 0.01	Slightly limited: wetness (slightly limited)	0.13
70007: Cliquot-----	Limited: slope (limited) percs slowly (moderately limited) small stones (moderately limited)	0.63 0.39 0.33	Limited: slope (limited) percs slowly (moderately limited) small stones (moderately limited)	0.63 0.39 0.33	Very limited: slope (very limited) small stones (very limited) percs slowly (moderately limited)	1.00 1.00 0.39	Not limited	

Table 11.--Recreational Site Development--Continued

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds		Paths and trails	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70008: Goss-----	Moderately limited: small stones (moderately limited)	0.36	Moderately limited: small stones (moderately limited)	0.36	Very limited: small stones (very limited) slope (limited)	1.00 0.98	Not limited	
70009: Goss-----	Limited: slope (limited) small stones (moderately limited)	0.63 0.54	Limited: slope (limited) small stones (moderately limited)	0.63 0.54	Very limited: slope (very limited) small stones (very limited)	1.00 1.00	Not limited	
70010: Goss-----	Very limited: slope (very limited) small stones (moderately limited) large stones (moderately limited)	1.00 0.42 0.40	Very limited: slope (very limited) small stones (moderately limited) large stones (moderately limited)	1.00 0.42 0.40	Very limited: slope (very limited) large stones >25% (very limited) small stones (very limited)	1.00 1.00 1.00	Limited: slope (limited) large stones (moderately limited)	0.92 0.40
70011: Goss-----	Very limited: slope (very limited) small stones (very limited)	1.00 1.00	Very limited: slope (very limited) small stones (very limited)	1.00 1.00	Very limited: slope (very limited) small stones (very limited)	1.00 1.00 1.00	Limited: slope (limited) small stones (slightly limited)	0.92 0.24
Moko-----	Limited: shallow to bedrock (limited) large surface stones (moderately limited) small stones (slightly limited)	0.90 0.37 0.18	Limited: shallow to bedrock (limited) large surface stones (moderately limited) small stones (slightly limited)	0.90 0.37 0.18	Very limited: shallow to bedrock (very limited) small stones (very limited) slope (very limited)	1.00 1.00 1.00	Moderately limited: large surface stones (moderately limited)	0.37
70012: Hoberg-----	Moderately limited: wetness (moderately limited) percs slowly (moderately limited)	0.50 0.39	Moderately limited: percs slowly (moderately limited) wetness (slightly limited)	0.39 0.28	Moderately limited: wetness (moderately limited) slope (moderately limited) percs slowly (moderately limited)	0.50 0.40 0.39	Slightly limited: wetness (slightly limited)	0.28

Table 11.--Recreational Site Development--Continued

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds		Paths and trails	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70014: Moko-----	Very limited: slope (very limited) shallow to bedrock (limited) too clayey (moderately limited)	1.00 0.90 0.60	Very limited: slope (very limited) shallow to bedrock (limited) too clayey (moderately limited)	1.00 0.90 0.60	Very limited: slope (very limited) shallow to bedrock (very limited) small stones (very limited)	1.00 1.00 1.00	Limited: slope (limited) too clayey (moderately limited) large surface stones (moderately limited)	0.92 0.60 0.37
Rock outcrop-----	Not rated		Not rated		Not rated		Not rated	
70040: Cliquot-----	Moderately limited: percs slowly (moderately limited)	0.39	Moderately limited: percs slowly (moderately limited)	0.39	Limited: slope (limited) percs slowly (moderately limited)	0.98 0.39	Not limited	
Bolivar-----	Not limited		Not limited		Limited: slope (limited) depth to bedrock (moderately limited) small stones (slightly limited)	0.98 0.53 0.01	Not limited	
70041: Goss-----	Limited: slope (limited) small stones (moderately limited) large stones (slightly limited)	0.63 0.37 0.17	Limited: slope (limited) small stones (moderately limited) large stones (slightly limited)	0.63 0.37 0.17	Very limited: slope (very limited) small stones (very limited) large stones >25% (very limited)	1.00 1.00 1.00	Slightly limited: large stones (slightly limited)	0.17
70042: Goss-----	Very limited: slope (very limited) small stones (very limited) too acid (slightly limited)	1.00 1.00 0.12	Very limited: slope (very limited) small stones (very limited) too acid (slightly limited)	1.00 1.00 0.12	Very limited: small stones (very limited) slope (very limited) too acid (slightly limited)	1.00 1.00 0.12	Limited: slope (limited) small stones (limited)	0.92 0.73

Table 11.--Recreational Site Development--Continued

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds		Paths and trails	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70043: Sonsac-----	Limited: large stones (limited) slope (slightly limited)	0.76 0.04	Limited: large stones (limited) slope (slightly limited)	0.76 0.04	Very limited: large stones >25% (very limited) slope (very limited) depth to bedrock (slightly limited)	1.00 1.00 0.27	Limited: large stones (limited)	0.76
Moko-----	Very limited: small stones (limited) shallow to bedrock (limited) slope (slightly limited)	1.00 0.90 0.04	Very limited: small stones (limited) shallow to bedrock (limited) slope (slightly limited)	1.00 0.90 0.04	Very limited: small stones (very limited) shallow to bedrock (very limited) slope (very limited)	1.00 1.00 1.00	Slightly limited: small stones (slightly limited)	0.01
Rock outcrop-----	Not rated		Not rated		Not rated		Not rated	
70044: Sonsac-----	Very limited: slope (very limited) small stones (moderately limited)	1.00 0.33	Very limited: slope (very limited) small stones (moderately limited)	1.00 0.33	Very limited: slope (very limited) small stones (very limited) depth to bedrock (slightly limited)	1.00 1.00 0.09	Limited: slope (limited)	0.92
Moko-----	Very limited: slope (very limited) shallow to bedrock (limited) small stones (limited)	1.00 0.90 0.82	Very limited: slope (very limited) shallow to bedrock (limited) small stones (limited)	1.00 0.90 0.82	Very limited: slope (very limited) shallow to bedrock (very limited) small stones (very limited)	1.00 1.00 1.00	Limited: slope (limited)	0.92
70047: Wanda-----	Not limited		Not limited		Moderately limited: slope (moderately limited) small stones (slightly limited)	0.40 0.01	Not limited	

Table 11.--Recreational Site Development--Continued

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds		Paths and trails	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70048: Alsup-----	Limited: large surface stones (limited) slope (limited) percs slowly (slightly limited)	0.70 0.63 0.13	Limited: large surface stones (limited) slope (limited) percs slowly (slightly limited)	0.70 0.63 0.13	Very limited: slope (very limited) percs slowly (slightly limited) small stones (slightly limited)	1.00 0.13 0.01	Very limited: erodes easily (very limited) large surface stones (limited)	1.00 0.70
70052: Arnica-----	Not limited		Not limited		Moderately limited: slope (moderately limited)	0.40	Not limited	
70053: Courtois-----	Not limited		Not limited		Moderately limited: slope (moderately limited)	0.40	Not limited	
70054: Cliquot-----	Limited: large surface stones (limited) slope (limited) small stones (moderately limited)	0.70 0.63 0.45	Limited: large surface stones (limited) slope (limited) small stones (moderately limited)	0.70 0.63 0.45	Very limited: small stones (very limited) slope (very limited) large stones (moderately limited)	1.00 1.00 0.60	Limited: large surface stones (limited)	0.70
71254: Cotter-----	Limited: flooding (rare) (limited)	0.90	Not limited		Not limited		Not limited	
71750: Cleora-----	Very limited: flooding (very limited)	1.00	Moderately limited: flooding (moderately limited)	0.60	Very limited: flooding (very limited)	1.00	Moderately limited: flooding (moderately limited)	0.60
73000: Pomme-----	Not limited		Not limited		Limited: slope (limited) small stones (moderately limited)	0.98 0.31	Not limited	

Table 11.--Recreational Site Development--Continued

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds		Paths and trails	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
73003: Ocie-----	Very limited: slope (very limited) small stones (very limited) percs slowly (moderately limited)	1.00 1.00 0.39	Very limited: slope (very limited) small stones (very limited) percs slowly (moderately limited)	1.00 1.00 0.39	Very limited: small stones (very limited) slope (very limited) percs slowly (moderately limited)	1.00 1.00 0.39	Limited: small stones (limited) slope (limited)	0.95 0.92
Gatewood-----	Very limited: slope (very limited) small stones (very limited) wetness (limited)	1.00 1.00 0.65	Very limited: slope (very limited) small stones (very limited) percs slowly (moderately limited)	1.00 1.00 0.39	Very limited: slope (very limited) small stones (very limited) wetness (limited)	1.00 1.00 0.65	Limited: slope (limited) wetness (moderately limited) small stones (slightly limited)	0.92 0.39 0.24
73005: Ocie-----	Very limited: small stones (very limited) percs slowly (moderately limited) slope (slightly limited)	1.00 0.39 0.04	Very limited: small stones (very limited) percs slowly (moderately limited) slope (slightly limited)	1.00 0.39 0.04	Very limited: small stones (very limited) slope (very limited) percs slowly (moderately limited)	1.00 1.00 0.39	Slightly limited: small stones (slightly limited)	0.30
73007: Plato-----	Very limited: wetness (very limited) percs slowly (very limited)	1.00 1.00	Very limited: percs slowly (very limited) wetness (limited)	1.00 0.68	Very limited: wetness (very limited) percs slowly (very limited)	1.00 1.00	Limited: wetness (limited)	0.68
73008: Viraton-----	Very limited: percs slowly (very limited) wetness (limited)	1.00 0.81	Very limited: percs slowly (very limited) wetness (moderately limited)	1.00 0.49	Very limited: percs slowly (very limited) wetness (limited) slope (moderately limited)	1.00 0.81 0.40	Moderately limited: wetness (moderately limited)	0.49
73059: Pomme-----	Not limited		Not limited		Not limited		Not limited	

Table 11.--Recreational Site Development--Continued

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds		Paths and trails	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
73075: Hobson-----	Moderately limited: percs slowly (moderately limited) wetness (moderately limited) too acid (slightly limited)	0.39 0.35 0.24	Moderately limited: percs slowly (moderately limited) too acid (slightly limited) wetness (slightly limited)	0.39 0.24 0.13	Moderately limited: percs slowly (moderately limited) wetness (moderately limited) too acid (slightly limited)	0.39 0.35 0.24	Slightly limited: wetness (slightly limited)	0.13
74625: Hartville-----	Limited: wetness (limited) percs slowly (moderately limited)	0.81 0.39	Moderately limited: wetness (moderately limited) percs slowly (moderately limited)	0.49 0.39	Limited: slope (limited) wetness (limited) percs slowly (moderately limited)	0.98 0.81 0.39	Moderately limited: wetness (moderately limited)	0.49
74641: Secesh-----	Very limited: flooding (very limited)	1.00	Not limited		Moderately limited: flooding (moderately limited) small stones (slightly limited)	0.60 0.01	Not limited	
75375: Horsecreek-----	Very limited: flooding (very limited)	1.00	Not limited		Moderately limited: flooding (moderately limited)	0.60	Not limited	
75377: Racket-----	Very limited: flooding (very limited)	1.00	Moderately limited: flooding (moderately limited)	0.60	Very limited: flooding (very limited) small stones (slightly limited)	1.00 0.18	Moderately limited: flooding (moderately limited)	0.60
75378: Sturkie-----	Very limited: flooding (very limited)	1.00	Moderately limited: flooding (moderately limited)	0.60	Very limited: flooding (very limited)	1.00	Moderately limited: flooding (moderately limited)	0.60
99000: Pits, quarries-----	Not rated		Not rated		Not rated		Not rated	

Table 11.--Recreational Site Development--Continued

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds		Paths and trails	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
99001: Water-----	Not rated		Not rated		Not rated		Not rated	
99004: Kanima-----	Very limited: small stones (very limited) slope (very limited)	1.00 1.00	Very limited: small stones (very limited) slope (very limited)	1.00 1.00	Very limited: small stones (very limited) slope (very limited)	1.00 1.00	Very limited: slope (very limited) small stones (moderately limited)	1.00 0.60
99007: Dam-----	Not rated		Not rated		Not rated		Not rated	

Table 12a.--Wildlife Habitat

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Grain and seed crops (for use as food and cover)		Domestic grasses and legumes (for use as food and cover)		Upland wild herbaceous plants		Upland shrubs and vines		Upland deciduous trees	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
40000: Barden-----	Moderately limited: moderate erodibility (moderately limited) percs slowly (moderately limited) wetness (slightly limited)	0.50 0.39 0.28	Moderately limited: moderate erodibility (moderately limited) percs slowly (moderately limited) wetness (slightly limited)	0.50 0.39 0.28	Slightly limited: wetness (slightly limited)	0.28	Slightly limited: wetness (slightly limited)	0.28	Moderately limited: wetness (moderately limited)	0.45
40001: Bolivar-----	Limited: high erodibility (limited) droughty (slightly limited) depth to bedrock (slightly limited)	0.80 0.10 0.06	Limited: high erodibility (limited) depth to bedrock (slightly limited)	0.80 0.06	Not limited		Slightly limited: depth to bedrock (slightly limited)	0.06	Slightly limited: depth to bedrock (slightly limited)	0.06
40004: Barden-----	Moderately limited: moderate erodibility (moderately limited) percs slowly (moderately limited) wetness (slightly limited)	0.50 0.39 0.28	Moderately limited: moderate erodibility (moderately limited) percs slowly (moderately limited) wetness (slightly limited)	0.50 0.39 0.28	Slightly limited: wetness (slightly limited)	0.28	Slightly limited: wetness (slightly limited)	0.28	Moderately limited: wetness (moderately limited)	0.45
40005: Sylvania-----	Limited: high erodibility (limited) percs slowly (slightly limited)	0.80 0.13	Limited: high erodibility (limited) percs slowly (slightly limited)	0.80 0.13	Not limited		Not limited		Slightly limited: wetness (slightly limited)	0.22

Table 12a.--Wildlife Habitat--Continued

Map symbol and soil name	Grain and seed crops (for use as food and cover)		Domestic grasses and legumes (for use as food and cover)		Upland wild herbaceous plants		Upland shrubs and vines		Upland deciduous trees	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
40006: Barco-----	Moderately limited: moderate erodibility (moderately limited) depth to bedrock (slightly limited) droughty (slightly limited)	0.50 0.27 0.13	Moderately limited: moderate erodibility (moderately limited) depth to bedrock (slightly limited)	0.50 0.27	Not limited		Slightly limited: depth to bedrock (slightly limited)	0.27	Slightly limited: depth to bedrock (slightly limited)	0.27
Sylvania-----	Moderately limited: moderate erodibility (moderately limited) percs slowly (slightly limited)	0.50 0.17	Moderately limited: moderate erodibility (moderately limited) percs slowly (slightly limited)	0.50 0.17	Not limited		Not limited		Slightly limited: wetness (slightly limited)	0.03
40007: Eldorado-----	Limited: droughty (limited) moderate erodibility (moderately limited) small stones (slightly limited)	0.89 0.50 0.27	Moderately limited: moderate erodibility (moderately limited) small stones (slightly limited)	0.50 0.27	Slightly limited: small stones (slightly limited)	0.03	Not limited		Not limited	
40008: Parsons-----	Very limited: percs slowly (very limited) wetness (limited) moderate erodibility (moderately limited)	1.00 0.99 0.50	Very limited: percs slowly (very limited) wetness (limited) moderate erodibility (moderately limited)	1.00 0.99 0.50	Limited: wetness (limited)	0.99	Limited: wetness (limited)	0.99	Very limited: wetness (very limited)	1.00
40009: Sylvania-----	Limited: high erodibility (limited) percs slowly (slightly limited)	0.80 0.13	Limited: high erodibility (limited) percs slowly (slightly limited)	0.80 0.13	Not limited		Not limited		Slightly limited: wetness (slightly limited)	0.22

Table 12a.--Wildlife Habitat--Continued

Map symbol and soil name	Grain and seed crops (for use as food and cover)		Domestic grasses and legumes (for use as food and cover)		Upland wild herbaceous plants		Upland shrubs and vines		Upland deciduous trees	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
40010: Collinsville--	Very limited: droughty (very limited) shallow to bedrock (very limited) high erodibility (limited)	1.00 1.00 0.80	Very limited: shallow to bedrock (very limited) droughty (very limited) high erodibility (limited)	1.00 1.00 0.80	Very limited: droughty (very limited)	1.00	Very limited: shallow to bedrock (very limited) droughty (very limited)	1.00 1.00	Very limited: shallow to bedrock (very limited) droughty (very limited)	1.00 1.00
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	
44001: Quarles-----	Very limited: wetness (very limited) percs slowly (moderately limited)	1.00 0.39	Very limited: wetness (very limited) percs slowly (moderately limited)	1.00 0.39	Very limited: wetness (very limited)	1.00	Very limited: wetness (very limited)	1.00	Very limited: wetness (very limited)	1.00
46000: Humansville---	Very limited: wetness (very limited) flooding (limited) percs slowly (slightly limited)	1.00 0.90 0.26	Very limited: wetness (very limited) flooding (limited) percs slowly (slightly limited)	1.00 0.90 0.26	Very limited: wetness (very limited)	1.00	Very limited: wetness (very limited)	1.00	Very limited: wetness (very limited)	1.00
66000: Moniteau-----	Very limited: wetness (very limited) flooding (moderately limited) percs slowly (slightly limited)	1.00 0.60 0.13	Very limited: wetness (very limited) flooding (moderately limited) percs slowly (slightly limited)	1.00 0.60 0.13	Very limited: wetness (very limited)	1.00	Very limited: wetness (very limited)	1.00	Very limited: wetness (very limited)	1.00
66001: Dameron-----	Very limited: small stones (very limited) flooding (limited)	1.00 0.90	Very limited: small stones (very limited) flooding (limited)	1.00 0.90	Limited: small stones (limited)	0.99	Limited: small stones (limited)	1.00	Not limited	

Table 12a.--Wildlife Habitat--Continued

Map symbol and soil name	Grain and seed crops (for use as food and cover)		Domestic grasses and legumes (for use as food and cover)		Upland wild herbaceous plants		Upland shrubs and vines		Upland deciduous trees	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70000: Bona-----	Limited: droughty (very limited) moderate erodibility (moderately limited) small stones (moderately limited)	1.00 0.50 0.50 0.40	Moderately limited: moderate erodibility (moderately limited) small stones (moderately limited) percs slowly (slightly limited)	0.50 0.40 0.13	Slightly limited: small stones (slightly limited)	0.06	Not limited		Not limited	
70001: Bona-----	Limited: droughty (limited) high erodibility (limited) small stones (limited)	0.97 0.80 0.75	Limited: high erodibility (limited) small stones (limited) percs slowly (slightly limited)	0.80 0.75 0.13	Slightly limited: small stones (slightly limited)	0.15	Not limited		Not limited	
70002: Alsup-----	Limited: high erodibility (limited) small stones (moderately limited) percs slowly (slightly limited)	0.80 0.36 0.13	Limited: high erodibility (limited) small stones (moderately limited) percs slowly (slightly limited)	0.80 0.36 0.13	Slightly limited: small stones (slightly limited)	0.05	Not limited		Slightly limited: wetness (slightly limited)	0.22
70003: Alsup-----	Limited: high erodibility (limited) small stones (moderately limited) percs slowly (slightly limited)	0.80 0.40 0.13	Limited: high erodibility (limited) small stones (moderately limited) percs slowly (slightly limited)	0.80 0.40 0.13	Slightly limited: small stones (slightly limited)	0.06	Not limited		Slightly limited: wetness (slightly limited)	0.22
70004: Alsup-----	Limited: high erodibility (limited) slope (moderately limited) percs slowly (slightly limited)	0.80 0.60 0.13	Limited: high erodibility (limited) slope (moderately limited) percs slowly (slightly limited)	0.80 0.60 0.13	Not limited		Not limited		Slightly limited: wetness (slightly limited)	0.22

Table 12a.--Wildlife Habitat--Continued

Map symbol and soil name	Grain and seed crops (for use as food and cover)		Domestic grasses and legumes (for use as food and cover)		Upland wild herbaceous plants		Upland shrubs and vines		Upland deciduous trees	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70006: Credon-----	Very limited: percs slowly (very limited) moderate erodibility (moderately limited) wetness (moderately limited)	1.00 0.50 0.36	Very limited: percs slowly (very limited) moderate erodibility (moderately limited) wetness (moderately limited)	1.00 0.50 0.36	Moderately limited: wetness (moderately limited)	0.36	Moderately limited: wetness (moderately limited)	0.36	Moderately limited: wetness (moderately limited)	0.51
70007: Cliquot-----	Limited: high erodibility (limited) droughty (limited) percs slowly (moderately limited)	0.80 0.62 0.39	Limited: high erodibility (limited) percs slowly (moderately limited) small stones (moderately limited)	0.80 0.39 0.33	Slightly limited: small stones (slightly limited)	0.04	Not limited		Slightly limited: wetness (slightly limited)	0.12
70008: Goss-----	Very limited: droughty (very limited) high erodibility (limited) small stones (moderately limited)	1.00 0.80 0.36	Limited: high erodibility (limited) small stones (moderately limited) droughty (slightly limited)	0.80 0.36 0.13	Slightly limited: droughty (slightly limited) small stones (slightly limited)	0.13 0.05	Slightly limited: droughty (slightly limited)	0.13	Slightly limited: droughty (slightly limited)	0.13
70009: Goss-----	Very limited: droughty (very limited) high erodibility (limited) small stones (moderately limited)	1.00 0.80 0.54	Limited: high erodibility (limited) small stones (moderately limited) droughty (slightly limited)	0.80 0.54 0.19	Slightly limited: droughty (slightly limited) small stones (slightly limited)	0.19 0.10	Slightly limited: droughty (slightly limited)	0.19	Slightly limited: droughty (slightly limited)	0.19
70010: Goss-----	Very limited: droughty (very limited) high erodibility (limited) large stones (limited)	1.00 0.80 0.73	Limited: high erodibility (limited) large stones (limited) droughty (limited)	0.80 0.73 0.72	Limited: droughty (limited) large stones (moderately limited) small stones (slightly limited)	0.72 0.40 0.07	Limited: droughty (limited) large stones (moderately limited)	0.72 0.40	Limited: droughty (limited) large stones (moderately limited)	0.72 0.40

Table 12a.--Wildlife Habitat--Continued

Map symbol and soil name	Grain and seed crops (for use as food and cover)		Domestic grasses and legumes (for use as food and cover)		Upland wild herbaceous plants		Upland shrubs and vines		Upland deciduous trees	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70011: Goss-----	Very limited: droughty (very limited) small stones (very limited) high erodibility (limited)	1.00 1.00 0.80 0.80	Very limited: small stones (very limited) high erodibility (limited) slope (moderately limited)	1.00 0.80 0.60	Moderately limited: droughty (moderately limited) small stones (moderately limited)	0.47 0.38	Moderately limited: droughty (moderately limited) small stones (slightly limited)	0.47 0.24	Moderately limited: droughty (moderately limited)	0.47
Moko-----	Very limited: droughty (very limited) shallow to bedrock (very limited) high erodibility (limited)	1.00 1.00 1.00 0.80	Very limited: droughty (very limited) shallow to bedrock (very limited) high erodibility (limited)	1.00 1.00 0.80	Very limited: droughty (very limited) small stones (slightly limited)	1.00 0.02	Very limited: droughty (very limited) shallow to bedrock (very limited)	1.00 1.00	Very limited: shallow to bedrock (very limited) droughty (very limited)	1.00 1.00
70012: Hoberg-----	Moderately limited: moderate erodibility (moderately limited) wetness (moderately limited) percs slowly (moderately limited)	0.50 0.44 0.39	Moderately limited: moderate erodibility (moderately limited) wetness (moderately limited) percs slowly (moderately limited)	0.50 0.44 0.39	Moderately limited: wetness (moderately limited)	0.44	Moderately limited: wetness (moderately limited)	0.44	Moderately limited: wetness (moderately limited)	0.59
70014: Moko-----	Very limited: droughty (very limited) shallow to bedrock (very limited) high erodibility (limited)	1.00 1.00 1.00 0.80	Very limited: droughty (very limited) shallow to bedrock (very limited) high erodibility (limited)	1.00 1.00 1.00 0.80	Very limited: droughty (very limited) too clayey (slightly limited) small stones (slightly limited)	1.00 0.15 0.02	Very limited: droughty (very limited) shallow to bedrock (very limited) too clayey (slightly limited)	1.00 1.00 0.15	Very limited: shallow to bedrock (very limited) droughty (very limited)	1.00 1.00
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	
70040: Cliquot-----	Limited: droughty (limited) high erodibility (limited) percs slowly (moderately limited)	0.98 0.80 0.39	Limited: high erodibility (limited) percs slowly (moderately limited)	0.80 0.39	Not limited		Not limited		Slightly limited: wetness (slightly limited)	0.01

Table 12a.--Wildlife Habitat--Continued

Map symbol and soil name	Grain and seed crops (for use as food and cover)		Domestic grasses and legumes (for use as food and cover)		Upland wild herbaceous plants		Upland shrubs and vines		Upland deciduous trees	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70040: Bolivar-----	Very limited: droughty (very limited) high erodibility (limited) depth to bedrock (moderately limited)	1.00 0.80 0.53	Limited: high erodibility (limited) depth to bedrock (moderately limited) droughty (moderately limited)	0.80 0.53 0.31	Moderately limited: droughty (moderately limited)	0.31	Moderately limited: depth to bedrock (moderately limited) droughty (moderately limited)	0.53 0.31	Moderately limited: depth to bedrock (moderately limited) droughty (moderately limited)	0.53 0.31
70041: Goss-----	Very limited: droughty (very limited) high erodibility (limited) large stones (moderately limited)	1.00 0.80 0.45	Limited: high erodibility (limited) large stones (moderately limited) small stones (moderately limited)	0.80 0.45 0.37	Slightly limited: large stones (slightly limited) droughty (slightly limited) small stones (slightly limited)	0.17 0.10 0.05	Slightly limited: large stones (slightly limited) droughty (slightly limited)	0.17 0.10	Slightly limited: large stones (slightly limited) droughty (slightly limited)	0.17 0.10
70042: Goss-----	Very limited: droughty (very limited) small stones (very limited) high erodibility (limited)	1.00 1.00 0.80	Very limited: small stones (very limited) high erodibility (limited) slope (moderately limited)	1.00 0.80 0.60	Limited: small stones (limited) droughty (slightly limited)	0.73 0.17	Limited: small stones (limited) droughty (slightly limited)	0.73 0.17	Slightly limited: droughty (slightly limited)	0.17
70043: Sonsac-----	Very limited: droughty (very limited) large stones >35% (very limited) high erodibility (limited)	1.00 1.00 0.80	Very limited: large stones >35% (very limited) high erodibility (limited) droughty (moderately limited)	1.00 0.80 0.37	Limited: large stones (limited) droughty (moderately limited)	0.76 0.37	Limited: large stones (limited) droughty (moderately limited) depth to bedrock (slightly limited)	0.76 0.37 0.27	Limited: large stones (limited) droughty (moderately limited) depth to bedrock (slightly limited)	0.76 0.37 0.27
Moko-----	Very limited: droughty (very limited) shallow to bedrock (very limited) small stones (limited)	1.00 1.00 1.00	Very limited: droughty (very limited) shallow to bedrock (very limited) small stones (limited)	1.00 1.00 1.00	Very limited: droughty (very limited) small stones (slightly limited)	1.00 0.24	Very limited: droughty (very limited) shallow to bedrock (very limited) small stones (slightly limited)	1.00 1.00 0.01	Very limited: shallow to bedrock (very limited) droughty (very limited)	1.00 1.00
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 12a.--Wildlife Habitat--Continued

Map symbol and soil name	Grain and seed crops (for use as food and cover)		Domestic grasses and legumes (for use as food and cover)		Upland wild herbaceous plants		Upland shrubs and vines		Upland deciduous trees	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70044: Sonsac-----	Very limited: droughty (very limited) high erodibility (limited) slope (moderately limited)	1.00 0.80 0.60	Limited: high erodibility (limited) slope (moderately limited) small stones (moderately limited)	0.80 0.60 0.33	Slightly limited: droughty (slightly limited) small stones (slightly limited)	0.07 0.04	Slightly limited: depth to bedrock (slightly limited) droughty (slightly limited)	0.09 0.07	Slightly limited: depth to bedrock (slightly limited) droughty (slightly limited)	0.09 0.07
Moko-----	Very limited: droughty (very limited) shallow to bedrock (very limited) small stones (limited)	1.00 1.00 0.82	Very limited: shallow to bedrock (very limited) droughty (very limited) small stones (limited)	1.00 1.00 0.82	Very limited: droughty (very limited) small stones (slightly limited)	1.00 0.17	Very limited: shallow to bedrock (very limited) droughty (very limited)	1.00 1.00	Very limited: shallow to bedrock (very limited) droughty (very limited)	1.00 1.00
70047: Wanda-----	Moderately limited: moderate erodibility (moderately limited)	0.50	Moderately limited: moderate erodibility (moderately limited)	0.50	Not limited		Not limited		Not limited	
70048: Alsup-----	Limited: high erodibility (limited) droughty (moderately limited) percs slowly (slightly limited)	0.80 0.31 0.13	Limited: high erodibility (limited) percs slowly (slightly limited)	0.80 0.13	Not limited		Not limited		Slightly limited: wetness (slightly limited)	0.22
70052: Arnica-----	Moderately limited: moderate erodibility (moderately limited) wetness (slightly limited)	0.50 0.13	Moderately limited: moderate erodibility (moderately limited) wetness (slightly limited)	0.50 0.13	Slightly limited: wetness (slightly limited)	0.13	Slightly limited: wetness (slightly limited)	0.13	Moderately limited: wetness (moderately limited)	0.37
70053: Courtois-----	Moderately limited: moderate erodibility (moderately limited) droughty (slightly limited)	0.50 0.26	Moderately limited: moderate erodibility (moderately limited)	0.50	Not limited		Not limited		Not limited	

Table 12a.--Wildlife Habitat--Continued

Map symbol and soil name	Grain and seed crops (for use as food and cover)		Domestic grasses and legumes (for use as food and cover)		Upland wild herbaceous plants		Upland shrubs and vines		Upland deciduous trees	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70054: Cliquot-----	Limited: droughty (limited) high erodibility (limited) small stones (moderately limited)	0.80 0.80 0.45	Limited: high erodibility (limited) small stones (moderately limited) percs slowly (moderately limited)	0.80 0.45 0.39	Slightly limited: small stones (slightly limited)	0.08	Not limited		Slightly limited: wetness (slightly limited)	0.01
71254: Cotter-----	Not limited		Not limited		Not limited		Not limited		Not limited	
71750: Cleora-----	Limited: flooding (limited) droughty (slightly limited)	0.90 0.01	Limited: flooding (limited)	0.90	Not limited		Not limited		Not limited	
73000: Pomme-----	Moderately limited: moderate erodibility (moderately limited) droughty (moderately limited)	0.50 0.45	Moderately limited: moderate erodibility (moderately limited)	0.50	Not limited		Not limited		Not limited	
73003: Ocie-----	Very limited: small stones (very limited) droughty (limited) high erodibility (limited)	1.00 0.94 0.80	Very limited: small stones (very limited) high erodibility (limited) slope (moderately limited)	1.00 0.80 0.60	Limited: small stones (limited) wetness (slightly limited)	0.94 0.28	Limited: small stones (limited) wetness (slightly limited)	0.95 0.28	Moderately limited: wetness (moderately limited)	0.45
Gatewood-----	Very limited: droughty (very limited) small stones (very limited) high erodibility (limited)	1.00 1.00 0.80	Very limited: small stones (very limited) high erodibility (limited) slope (moderately limited)	1.00 0.80 0.60	Moderately limited: wetness (moderately limited) small stones (moderately limited) droughty (moderately limited)	0.50 0.38 0.38	Moderately limited: wetness (moderately limited) depth to bedrock (moderately limited) droughty (moderately limited)	0.50 0.46 0.38	Limited: wetness (limited) depth to bedrock (moderately limited) droughty (moderately limited)	0.71 0.46 0.38

Table 12a.--Wildlife Habitat--Continued

Map symbol and soil name	Grain and seed crops (for use as food and cover)		Domestic grasses and legumes (for use as food and cover)		Upland wild herbaceous plants		Upland shrubs and vines		Upland deciduous trees	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
73005: Ocie-----	Very limited: small stones (very limited) moderate erodibility (moderately limited) percs slowly (moderately limited)	1.00 0.50 0.39	Very limited: small stones (very limited) moderate erodibility (moderately limited) percs slowly (moderately limited)	1.00 0.50 0.39	Moderately limited: small stones (moderately limited) wetness (slightly limited)	0.42 0.28	Slightly limited: small stones (slightly limited) wetness (slightly limited)	0.30 0.28	Moderately limited: wetness (moderately limited)	0.45
73007: Plato-----	Very limited: percs slowly (very limited) wetness (limited) droughty (moderately limited)	1.00 0.68 0.55	Very limited: percs slowly (very limited) wetness (limited) moderate erodibility (moderately limited)	1.00 0.68 0.50	Limited: wetness (limited)	0.68	Limited: wetness (limited)	0.68	Very limited: wetness (very limited)	1.00
73008: Viraton-----	Very limited: percs slowly (very limited) droughty (moderately limited) wetness (moderately limited)	1.00 0.57 0.55	Very limited: percs slowly (very limited) wetness (moderately limited) moderate erodibility (moderately limited)	1.00 0.55 0.50	Moderately limited: wetness (moderately limited)	0.55	Moderately limited: wetness (moderately limited)	0.55	Limited: wetness (limited)	0.85
73059: Pomme-----	Not limited		Not limited		Not limited		Not limited		Not limited	
73075: Hobson-----	Moderately limited: droughty (moderately limited) moderate erodibility (moderately limited) percs slowly (moderately limited)	0.51 0.50 0.39	Moderately limited: moderate erodibility (moderately limited) percs slowly (moderately limited) wetness (moderately limited)	0.50 0.39 0.36	Moderately limited: wetness (moderately limited)	0.36	Moderately limited: wetness (moderately limited)	0.36	Moderately limited: wetness (moderately limited)	0.51

Table 12a.--Wildlife Habitat--Continued

Map symbol and soil name	Grain and seed crops (for use as food and cover)		Domestic grasses and legumes (for use as food and cover)		Upland wild herbaceous plants		Upland shrubs and vines		Upland deciduous trees	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
74625: Hartville-----	Limited: high erodibility (limited) wetness (moderately limited) percs slowly (moderately limited)	0.80 0.55 0.39	Limited: high erodibility (limited) wetness (moderately limited) percs slowly (moderately limited)	0.80 0.55 0.39	Moderately limited: wetness (moderately limited)	0.55	Moderately limited: wetness (moderately limited)	0.55	Limited: wetness (limited)	0.85
74641: Secesh-----	Moderately limited: flooding (moderately limited)	0.60	Moderately limited: flooding (moderately limited)	0.60	Not limited		Not limited		Not limited	
75375: Horsecreek----	Moderately limited: flooding (moderately limited)	0.60	Moderately limited: flooding (moderately limited)	0.60	Not limited		Not limited		Not limited	
75377: Racket-----	Limited: flooding (limited)	0.90	Limited: flooding (limited)	0.90	Not limited		Not limited		Not limited	
75378: Sturkie-----	Limited: flooding (limited)	0.90	Limited: flooding (limited)	0.90	Not limited		Not limited		Not limited	
99000: Pits, quarries	Not rated		Not rated		Not rated		Not rated		Not rated	
99001: Water-----	Not rated		Not rated		Not rated		Not rated		Not rated	
99004: Kanima-----	Very limited: small stones (very limited) droughty (very limited) high erodibility (limited)	1.00 1.00 0.80	Very limited: small stones (very limited) high erodibility (limited) slope (limited)	1.00 0.80 0.76	Moderately limited: small stones (moderately limited) droughty (slightly limited)	0.60 0.28	Moderately limited: small stones (moderately limited) droughty (slightly limited)	0.60 0.28	Slightly limited: droughty (slightly limited)	0.28

Table 12a.--Wildlife Habitat--Continued

Map symbol and soil name	Grain and seed crops (for use as food and cover)		Domestic grasses and legumes (for use as food and cover)		Upland wild herbaceous plants		Upland shrubs and vines		Upland deciduous trees	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
99007: Dam-----	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 12b.--Wildlife Habitat

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Upland mixed deciduous-conifer trees		Riparian herbaceous plants		Riparian shrubs, vines, and trees		Freshwater wetland plants		Irrigated freshwater wetland plants	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
40000: Barden-----	Moderately limited: wetness (moderately limited)	0.45	Limited: infrequent flooding (limited) deep to water (limited)	0.80 0.61	Not limited		Limited: deep to water (limited)	0.61	Not limited	
40001: Bolivar-----	Slightly limited: depth to bedrock (slightly limited)	0.06	Limited: infrequent flooding (limited)	0.80	Not limited		Not limited		Limited: slope (limited) seepage (moderately limited)	0.91 0.45
40004: Barden-----	Moderately limited: wetness (moderately limited)	0.45	Limited: infrequent flooding (limited) deep to water (limited)	0.80 0.61	Not limited		Limited: deep to water (limited)	0.61	Moderately limited: slope (moderately limited)	0.31
40005: Sylvania-----	Slightly limited: wetness (slightly limited)	0.22	Very limited: deep to water (very limited) infrequent flooding (limited)	1.00 0.80	Slightly limited: deep to water (slightly limited)	0.08	Very limited: deep to water (very limited)	1.00	Very limited: slope (very limited) seepage (slightly limited) deep to water (slightly limited)	1.00 0.18 0.08
40006: Barco-----	Slightly limited: depth to bedrock (slightly limited)	0.27	Limited: infrequent flooding (limited)	0.80	Not limited		Not limited		Moderately limited: seepage (moderately limited) slope (moderately limited)	0.45 0.31

Table 12b.--Wildlife Habitat--Continued

Map symbol and soil name	Upland mixed deciduous-conifer trees		Riparian herbaceous plants		Riparian shrubs, vines, and trees		Freshwater wetland plants		Irrigated freshwater wetland plants	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
40006: Sylvania-----	Slightly limited: wetness (slightly limited)	0.03	Very limited: deep to water (very limited) infrequent flooding (limited)	1.00 0.80	Slightly limited: deep to water (slightly limited)	0.28	Very limited: deep to water (very limited)	1.00	Moderately limited: slope (moderately limited) deep to water (slightly limited) seepage (slightly limited)	0.31 0.28 0.15
40007: Eldorado-----	Not limited		Limited: infrequent flooding (limited)	0.80	Not limited		Not limited		Very limited: slope (very limited) seepage (moderately limited)	1.00 0.45
40008: Parsons-----	Very limited: wetness (very limited)	1.00	Limited: infrequent flooding (limited) deep to water (slightly limited)	0.80 0.02	Not limited		Slightly limited: deep to water (slightly limited)	0.02	Not limited	
40009: Sylvania-----	Slightly limited: wetness (slightly limited)	0.22	Very limited: deep to water (very limited) infrequent flooding (limited)	1.00 0.80	Slightly limited: deep to water (slightly limited)	0.08	Very limited: deep to water (very limited)	1.00	Very limited: slope (very limited) seepage (slightly limited) deep to water (slightly limited)	1.00 0.18 0.08
40010: Collinsville--	Very limited: shallow to bedrock (very limited) droughty (very limited)	1.00 1.00	Limited: infrequent flooding (limited)	0.80	Very limited: droughty (very limited)	1.00	Not limited		Very limited: slope (very limited) seepage (limited)	1.00 0.79
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	
44001: Quarles-----	Very limited: wetness (very limited)	1.00	Limited: infrequent flooding (limited)	0.80	Not limited		Not limited		Not limited	

Table 12b.--Wildlife Habitat--Continued

Map symbol and soil name	Upland mixed deciduous- conifer trees		Riparian herbaceous plants		Riparian shrubs, vines, and trees		Freshwater wetland plants		Irrigated freshwater wetland plants	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
46000: Humansville---	Very limited: wetness (very limited)	1.00	Moderately limited: infrequent flooding (moderately limited)	0.50	Not limited		Not limited		Slightly limited: seepage (slightly limited)	0.07
66000: Moniteau-----	Very limited: wetness (very limited)	1.00	Moderately limited: infrequent flooding (moderately limited)	0.50	Not limited		Not limited		Slightly limited: seepage (slightly limited)	0.18
66001: Dameron-----	Not limited		Limited: small stones (limited)	1.00	Limited: small stones (limited)	1.00	Not limited		Moderately limited: seepage (moderately limited)	0.45
70000: Bona-----	Not limited		Limited: infrequent flooding (limited)	0.80	Not limited		Not limited		Limited: slope (limited) seepage (slightly limited)	0.91 0.18
70001: Bona-----	Not limited		Limited: infrequent flooding (limited)	0.80	Not limited		Not limited		Very limited: slope (very limited) seepage (slightly limited)	1.00 0.18
70002: Alsop-----	Slightly limited: wetness (slightly limited)	0.22	Very limited: deep to water (very limited) infrequent flooding (limited)	1.00 0.80	Slightly limited: deep to water (slightly limited)	0.08	Very limited: deep to water (very limited)	1.00	Limited: slope (limited) seepage (slightly limited) deep to water (slightly limited)	0.91 0.18 0.08
70003: Alsop-----	Slightly limited: wetness (slightly limited)	0.22	Very limited: deep to water (very limited) infrequent flooding (limited)	1.00 0.80	Slightly limited: deep to water (slightly limited)	0.08	Very limited: deep to water (very limited)	1.00	Very limited: slope (very limited) seepage (slightly limited) deep to water (slightly limited)	1.00 0.18 0.08

Table 12b.--Wildlife Habitat--Continued

Map symbol and soil name	Upland mixed deciduous- conifer trees		Riparian herbaceous plants		Riparian shrubs, vines, and trees		Freshwater wetland plants		Irrigated freshwater wetland plants	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70004: Alsup-----	Slightly limited: wetness (slightly limited)	0.22	Very limited: deep to water (very limited) infrequent flooding (limited)	1.00 0.80	Slightly limited: deep to water (slightly limited)	0.08	Very limited: deep to water (very limited)	1.00	Very limited: slope (very limited) seepage (slightly limited) deep to water (slightly limited)	1.00 0.18 0.08
70006: Credon-----	Moderately limited: wetness (moderately limited)	0.51	Limited: infrequent flooding (limited) deep to water (moderately limited)	0.80 0.53	Not limited		Moderately limited: deep to water (moderately limited)	0.53	Not limited	
70007: Cliquot-----	Slightly limited: wetness (slightly limited)	0.12	Very limited: deep to water (very limited) infrequent flooding (limited)	1.00 0.80	Slightly limited: deep to water (slightly limited)	0.19	Very limited: deep to water (very limited)	1.00	Very limited: slope (very limited) deep to water (slightly limited)	1.00 0.19
70008: Goss-----	Slightly limited: droughty (slightly limited)	0.13	Limited: infrequent flooding (limited)	0.80	Slightly limited: droughty (slightly limited)	0.13	Not limited		Limited: slope (limited) seepage (moderately limited)	0.91 0.45
70009: Goss-----	Slightly limited: droughty (slightly limited)	0.19	Limited: infrequent flooding (limited)	0.80	Slightly limited: droughty (slightly limited)	0.19	Not limited		Very limited: slope (very limited) seepage (moderately limited)	1.00 0.45
70010: Goss-----	Limited: droughty (limited) large stones (moderately limited)	0.72 0.40	Limited: infrequent flooding (limited) large stones (moderately limited)	0.80 0.40	Limited: droughty (limited) large stones (moderately limited)	0.72 0.40	Not limited		Very limited: slope (very limited) seepage (moderately limited)	1.00 0.45

Table 12b.--Wildlife Habitat--Continued

Map symbol and soil name	Upland mixed deciduous- conifer trees		Riparian herbaceous plants		Riparian shrubs, vines, and trees		Freshwater wetland plants		Irrigated freshwater wetland plants	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70011: Goss-----	Moderately limited: droughty (moderately limited)	0.47	Limited: infrequent flooding (limited) small stones (slightly limited)	0.80 0.24	Moderately limited: droughty (moderately limited) small stones (slightly limited)	0.47 0.24	Not limited		Very limited: slope (very limited) seepage (moderately limited)	1.00 0.45
Moko-----	Very limited: shallow to bedrock (very limited) droughty (very limited)	1.00 1.00	Limited: infrequent flooding (limited)	0.80	Very limited: droughty (very limited)	1.00	Not limited		Very limited: slope (very limited) seepage (moderately limited)	1.00 0.45
70012: Hoberg-----	Moderately limited: wetness (moderately limited)	0.59	Limited: infrequent flooding (limited) deep to water (moderately limited)	0.80 0.45	Not limited		Moderately limited: deep to water (moderately limited)	0.45	Moderately limited: slope (moderately limited)	0.31
70014: Moko-----	Very limited: shallow to bedrock (very limited) droughty (very limited)	1.00 1.00	Limited: infrequent flooding (limited)	0.80	Very limited: droughty (very limited)	1.00	Not limited		Very limited: slope (very limited) seepage (moderately limited)	1.00 0.45
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	
70040: Cliquot-----	Slightly limited: wetness (slightly limited)	0.01	Very limited: deep to water (very limited) infrequent flooding (limited)	1.00 0.80	Slightly limited: deep to water (slightly limited)	0.30	Very limited: deep to water (very limited)	1.00	Limited: slope (limited) deep to water (slightly limited)	0.91 0.30
Bolivar-----	Moderately limited: depth to bedrock (moderately limited) droughty (moderately limited)	0.53 0.31	Limited: infrequent flooding (limited)	0.80	Moderately limited: droughty (moderately limited)	0.31	Not limited		Limited: slope (limited) seepage (moderately limited)	0.91 0.45

Table 12b.--Wildlife Habitat--Continued

Map symbol and soil name	Upland mixed deciduous-conifer trees		Riparian herbaceous plants		Riparian shrubs, vines, and trees		Freshwater wetland plants		Irrigated freshwater wetland plants	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70041: Goss-----	Slightly limited: large stones (slightly limited) droughty (slightly limited)	0.17 0.10	Limited: infrequent flooding (limited) large stones (slightly limited)	0.80 0.17	Slightly limited: large stones (slightly limited) droughty (slightly limited)	0.17 0.10	Not limited		Very limited: slope (very limited) seepage (moderately limited)	1.00 0.45
70042: Goss-----	Slightly limited: droughty (slightly limited)	0.17	Limited: infrequent flooding (limited) small stones (limited)	0.80 0.73	Limited: small stones (limited) droughty (slightly limited)	0.73 0.17	Not limited		Very limited: slope (very limited) seepage (moderately limited)	1.00 0.45
70043: Sonsac-----	Limited: large stones (limited) droughty (moderately limited) depth to bedrock (slightly limited)	0.76 0.37 0.27	Limited: infrequent flooding (limited) large stones (limited)	0.80 0.76	Limited: large stones (limited) droughty (moderately limited)	0.76 0.37	Not limited		Very limited: slope (very limited) seepage (moderately limited)	1.00 0.45
Moko-----	Very limited: shallow to bedrock (very limited) droughty (very limited)	1.00 1.00	Limited: infrequent flooding (limited) small stones (slightly limited)	0.80 0.01	Very limited: droughty (very limited) small stones (slightly limited)	1.00 0.01	Not limited		Very limited: slope (very limited) seepage (moderately limited)	1.00 0.45
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	
70044: Sonsac-----	Slightly limited: depth to bedrock (slightly limited) droughty (slightly limited)	0.09 0.07	Limited: infrequent flooding (limited)	0.80	Slightly limited: droughty (slightly limited)	0.07	Not limited		Very limited: slope (very limited) seepage (moderately limited)	1.00 0.45
Moko-----	Very limited: shallow to bedrock (very limited) droughty (very limited)	1.00 1.00	Limited: infrequent flooding (limited)	0.80	Very limited: droughty (very limited)	1.00	Not limited		Very limited: slope (very limited) seepage (moderately limited)	1.00 0.45

Table 12b.--Wildlife Habitat--Continued

Map symbol and soil name	Upland mixed deciduous- conifer trees		Riparian herbaceous plants		Riparian shrubs, vines, and trees		Freshwater wetland plants		Irrigated freshwater wetland plants	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70047: Wanda-----	Not limited		Limited: infrequent flooding (limited)	0.80	Not limited		Not limited		Moderately limited: seepage (moderately limited) slope (moderately limited)	0.45 0.31
70048: Alsop-----	Slightly limited: wetness (slightly limited)	0.22	Very limited: deep to water (very limited) infrequent flooding (limited)	1.00 0.80	Slightly limited: deep to water (slightly limited)	0.08	Very limited: deep to water (very limited)	1.00	Very limited: slope (very limited) seepage (slightly limited) deep to water (slightly limited)	1.00 0.18 0.08
70052: Arnica-----	Moderately limited: wetness (moderately limited)	0.37	Limited: deep to water (limited) infrequent flooding (limited)	0.82 0.80	Not limited		Limited: deep to water (limited)	0.82	Moderately limited: seepage (moderately limited) slope (moderately limited)	0.45 0.31
70053: Courtois-----	Not limited		Limited: infrequent flooding (limited)	0.80	Not limited		Not limited		Moderately limited: seepage (moderately limited) slope (moderately limited)	0.45 0.31
70054: Cliquot-----	Slightly limited: wetness (slightly limited)	0.01	Very limited: deep to water (very limited) infrequent flooding (limited)	1.00 0.80	Slightly limited: deep to water (slightly limited)	0.30	Very limited: deep to water (very limited)	1.00	Very limited: slope (very limited) deep to water (slightly limited)	1.00 0.30
71254: Cotter-----	Not limited		Limited: infrequent flooding (limited)	0.80	Not limited		Not limited		Moderately limited: seepage (moderately limited)	0.45
71750: Cleora-----	Not limited		Not limited		Not limited		Not limited		Limited: seepage (limited)	0.79

Table 12b.--Wildlife Habitat--Continued

Map symbol and soil name	Upland mixed deciduous-conifer trees		Riparian herbaceous plants		Riparian shrubs, vines, and trees		Freshwater wetland plants		Irrigated freshwater wetland plants	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
73000: Pomme-----	Not limited		Limited: infrequent flooding (limited)	0.80	Not limited		Not limited		Limited: slope (limited) seepage (moderately limited)	0.91 0.45
73003: Ocie-----	Moderately limited: wetness (moderately limited)	0.45	Limited: small stones (limited) infrequent flooding (limited) deep to water (limited)	0.95 0.80 0.61	Limited: small stones (limited)	0.95	Limited: deep to water (limited)	0.61	Very limited: slope (very limited)	1.00
Gatewood-----	Limited: wetness (limited) depth to bedrock (moderately limited) droughty (moderately limited)	0.71 0.46 0.38	Limited: infrequent flooding (limited) deep to water (moderately limited) small stones (slightly limited)	0.80 0.40 0.24	Moderately limited: droughty (moderately limited) small stones (slightly limited)	0.38 0.24	Moderately limited: deep to water (moderately limited)	0.40	Very limited: slope (very limited)	1.00
73005: Ocie-----	Moderately limited: wetness (moderately limited)	0.45	Limited: infrequent flooding (limited) deep to water (limited) small stones (slightly limited)	0.80 0.61 0.30	Slightly limited: small stones (slightly limited)	0.30	Limited: deep to water (limited)	0.61	Very limited: slope (very limited)	1.00
73007: Plato-----	Very limited: wetness (very limited)	1.00	Limited: infrequent flooding (limited) deep to water (slightly limited)	0.80 0.24	Not limited		Slightly limited: deep to water (slightly limited)	0.24	Not limited	
73008: Viraton-----	Limited: wetness (limited)	0.85	Limited: infrequent flooding (limited) deep to water (moderately limited)	0.80 0.35	Not limited		Moderately limited: deep to water (moderately limited)	0.35	Moderately limited: slope (moderately limited)	0.31

Table 12b.--Wildlife Habitat--Continued

Map symbol and soil name	Upland mixed deciduous- conifer trees		Riparian herbaceous plants		Riparian shrubs, vines, and trees		Freshwater wetland plants		Irrigated freshwater wetland plants	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
73059: Pomme-----	Not limited		Limited: infrequent flooding (limited)	0.80	Not limited		Not limited		Moderately limited: seepage (moderately limited)	0.45
73075: Hobson-----	Moderately limited: wetness (moderately limited)	0.51	Limited: infrequent flooding (limited) deep to water (moderately limited)	0.80 0.53	Not limited		Moderately limited: deep to water (moderately limited)	0.53	Not limited	
74625: Hartville-----	Limited: wetness (limited)	0.85	Limited: infrequent flooding (limited) deep to water (moderately limited)	0.80 0.35	Not limited		Moderately limited: deep to water (moderately limited)	0.35	Limited: slope (limited)	0.91
74641: Secesh-----	Not limited		Moderately limited: infrequent flooding (moderately limited)	0.50	Not limited		Not limited		Moderately limited: seepage (moderately limited)	0.45
75375: Horsecreek----	Not limited		Moderately limited: infrequent flooding (moderately limited)	0.50	Not limited		Not limited		Moderately limited: seepage (moderately limited)	0.45
75377: Racket-----	Not limited		Not limited		Not limited		Not limited		Moderately limited: seepage (moderately limited)	0.45
75378: Sturkie-----	Not limited		Not limited		Not limited		Not limited		Moderately limited: seepage (moderately limited)	0.45
99000: Pits, quarries	Not rated		Not rated		Not rated		Not rated		Not rated	
99001: Water-----	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 12b.--Wildlife Habitat--Continued

Map symbol and soil name	Upland mixed deciduous- conifer trees		Riparian herbaceous plants		Riparian shrubs, vines, and trees		Freshwater wetland plants		Irrigated freshwater wetland plants	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
99004: Kanima-----	Slightly limited: droughty (slightly limited)	0.28	Limited: infrequent flooding (limited) small stones (moderately limited)	0.80 0.60	Moderately limited: small stones (moderately limited) droughty (slightly limited)	0.60 0.28	Not limited		Very limited: slope (very limited) seepage (moderately limited)	1.00 0.45
99007: Dam-----	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 13.--Building Site Development

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings		Local roads and streets		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
40000: Barden-----	Moderately limited: shrink-swell (moderately limited) wetness (moderately limited)	0.45 0.45	Very limited: wetness (very limited) shrink-swell (limited)	1.00 0.71	Moderately limited: shrink-swell (moderately limited)	0.45	Very limited: low strength (very limited) shrink-swell (moderately limited)	1.00 0.45	Not limited	
40001: Bolivar-----	Moderately limited: shrink-swell (moderately limited)	0.45	Limited: depth to bedrock (limited) shrink-swell (slightly limited) soft bedrock <40" (slightly limited)	0.90 0.06 0.01	Limited: slope (limited) shrink-swell (moderately limited)	0.68 0.45	Moderately limited: shrink-swell (moderately limited)	0.45	Slightly limited: depth to bedrock (slightly limited)	0.06
40004: Barden-----	Very limited: shrink-swell (very limited) wetness (moderately limited)	1.00 0.45	Very limited: shrink-swell (very limited) wetness (very limited)	1.00 1.00	Very limited: shrink-swell (very limited) slope (slightly limited)	1.00 0.15	Very limited: low strength (very limited) shrink-swell (very limited)	1.00 1.00	Not limited	
40005: Sylvania-----	Very limited: shrink-swell (very limited) slope (moderately limited) wetness (slightly limited)	1.00 0.60 0.22	Very limited: shrink-swell (very limited) wetness (limited) slope (moderately limited)	1.00 0.90 0.60	Very limited: shrink-swell (very limited) slope (very limited)	1.00 1.00	Very limited: low strength (very limited) shrink-swell (very limited) slope (slightly limited)	1.00 1.00 0.16	Moderately limited: too acid (moderately limited) slope (slightly limited)	0.48 0.16
40006: Barco-----	Moderately limited: shrink-swell (moderately limited)	0.45	Moderately limited: soft bedrock <40" (moderately limited) shrink-swell (slightly limited)	0.35 0.27	Moderately limited: shrink-swell (moderately limited) slope (slightly limited)	0.45 0.15	Limited: low strength (limited) shrink-swell (moderately limited)	0.78 0.45	Slightly limited: depth to bedrock (slightly limited) too acid (slightly limited)	0.27 0.24

Table 13.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings		Local roads and streets		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
40006: Sylvania-----	Very limited: shrink-swell (very limited) wetness (slightly limited)	1.00 0.03	Limited: shrink-swell (limited) wetness (limited)	0.69 0.64	Very limited: shrink-swell (very limited) slope (slightly limited)	1.00 0.15	Very limited: shrink-swell (very limited) low strength (very limited)	1.00 1.00	Slightly limited: too acid (slightly limited)	0.24
40007: Eldorado-----	Moderately limited: slope (moderately limited) shrink-swell (moderately limited) large stones (slightly limited)	0.45 0.45 0.30	Moderately limited: slope (moderately limited) shrink-swell (moderately limited) large stones (slightly limited)	0.45 0.39 0.30	Very limited: slope (very limited) shrink-swell (moderately limited) large stones (slightly limited)	1.00 0.45 0.30	Moderately limited: shrink-swell (moderately limited) large stones (slightly limited) slope (slightly limited)	0.45 0.30 0.04	Slightly limited: small stones (slightly limited) large stones (slightly limited) slope (slightly limited)	0.27 0.19 0.04
40008: Parsons-----	Very limited: wetness (very limited) shrink-swell (very limited)	1.00 1.00	Very limited: wetness (very limited) shrink-swell (very limited)	1.00 1.00	Very limited: shrink-swell (very limited) wetness (limited)	1.00 0.99	Very limited: low strength (very limited) shrink-swell (very limited) wetness (limited)	1.00 1.00 0.99	Limited: wetness (limited)	0.99
40009: Sylvania-----	Very limited: shrink-swell (very limited) wetness (slightly limited) slope (slightly limited)	1.00 0.22 0.15	Very limited: shrink-swell (very limited) wetness (limited) slope (slightly limited)	1.00 0.90 0.15	Very limited: shrink-swell (very limited) slope (limited)	1.00 0.83	Very limited: shrink-swell (very limited)	1.00	Not limited	
40010: Collinsville--	Very limited: hard bedrock <20" (very limited) slope (moderately limited)	1.00 0.45	Very limited: hard bedrock <40" (very limited) slope (moderately limited)	1.00 0.45	Very limited: hard bedrock <20" (very limited) slope (very limited)	1.00 1.00	Very limited: hard bedrock <20" (very limited) slope (slightly limited)	1.00 0.04	Very limited: shallow to bedrock (very limited) droughty (very limited) slope (slightly limited)	1.00 1.00 0.04
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 13.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings		Local roads and streets		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
44001: Quarles-----	Very limited: wetness (very limited) flooding (very limited)	1.00 1.00	Very limited: flooding (very limited) wetness (very limited) shrink-swell (limited)	1.00 1.00 0.84	Very limited: flooding (very limited) wetness (very limited)	1.00 1.00	Very limited: wetness (very limited) flooding (rare) (limited)	1.00 0.90	Very limited: wetness (very limited) too acid (slightly limited)	1.00 0.24
46000: Humansville---	Very limited: wetness (very limited) flooding (very limited) shrink-swell (moderately limited)	1.00 1.00 0.45	Very limited: flooding (very limited) wetness (very limited) shrink-swell (slightly limited)	1.00 1.00 0.20	Very limited: flooding (very limited) wetness (very limited) shrink-swell (moderately limited)	1.00 1.00 0.45	Very limited: low strength (very limited) wetness (very limited) flooding (very limited)	1.00 1.00 1.00	Very limited: wetness (very limited) flooding (very limited)	1.00 1.00
66000: Moniteau-----	Very limited: wetness (very limited) flooding (very limited) shrink-swell (moderately limited)	1.00 1.00 0.45	Very limited: flooding (very limited) wetness (very limited) shrink-swell (slightly limited)	1.00 1.00 0.30	Very limited: flooding (very limited) wetness (very limited) shrink-swell (moderately limited)	1.00 1.00 0.45	Very limited: low strength (very limited) wetness (very limited) flooding (very limited)	1.00 1.00 1.00	Very limited: wetness (very limited) flooding (moderately limited)	1.00 0.60
66001: Dameron-----	Very limited: flooding (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: flooding (very limited) shrink-swell (slightly limited)	1.00 0.29	Very limited: flooding (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: flooding (very limited) low strength (very limited) shrink-swell (moderately limited)	1.00 1.00 0.45	Very limited: flooding (very limited) small stones (very limited)	1.00 1.00
70000: Bona-----	Moderately limited: shrink-swell (moderately limited)	0.45	Slightly limited: shrink-swell (slightly limited)	0.30	Limited: slope (limited) shrink-swell (moderately limited)	0.68 0.45	Very limited: low strength (very limited) shrink-swell (moderately limited)	1.00 0.45	Moderately limited: small stones (moderately limited)	0.40

Table 13.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings		Local roads and streets		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70001: Bona-----	Limited: slope (limited) shrink-swell (moderately limited)	0.76 0.45	Limited: slope (limited) shrink-swell (moderately limited)	0.76 0.41	Very limited: slope (very limited) shrink-swell (moderately limited)	1.00 0.45	Limited: slope (limited) shrink-swell (moderately limited)	0.63 0.45	Limited: small stones (limited) slope (limited)	0.75 0.63
70002: Alsup-----	Very limited: shrink-swell (very limited) wetness (slightly limited)	1.00 0.22	Limited: shrink-swell (limited) wetness (limited)	1.00 0.90	Very limited: shrink-swell (very limited) slope (limited)	1.00 0.68	Very limited: low strength (very limited) shrink-swell (very limited)	1.00 1.00	Moderately limited: small stones (moderately limited) too acid (slightly limited)	0.36 0.12
70003: Alsup-----	Limited: slope (limited) shrink-swell (moderately limited) wetness (slightly limited)	0.76 0.45 0.22	Limited: wetness (limited) slope (limited) shrink-swell (limited)	0.90 0.76 0.76	Very limited: slope (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: low strength (very limited) slope (limited) shrink-swell (moderately limited)	1.00 0.63 0.45	Limited: slope (limited) small stones (moderately limited) too acid (slightly limited)	0.63 0.40 0.24
70004: Alsup-----	Very limited: slope (very limited) shrink-swell (moderately limited) wetness (slightly limited)	1.00 0.45 0.22	Very limited: slope (very limited) wetness (limited) shrink-swell (limited)	1.00 0.90 0.79	Very limited: slope (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: slope (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: slope (very limited)	1.00
70006: Credon-----	Moderately limited: wetness (moderately limited) shrink-swell (moderately limited)	0.51 0.45	Very limited: wetness (very limited) shrink-swell (limited)	1.00 0.70	Moderately limited: shrink-swell (moderately limited) wetness (slightly limited)	0.45 0.13	Very limited: low strength (very limited) shrink-swell (moderately limited) wetness (slightly limited)	1.00 0.45 0.13	Slightly limited: wetness (slightly limited)	0.13

Table 13.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings		Local roads and streets		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70007: Cliquot-----	Limited: slope (limited) wetness (slightly limited)	0.76 0.12	Limited: wetness (limited) slope (limited) shrink-swell (limited)	0.78 0.76 0.74	Very limited: slope (very limited)	1.00	Limited: slope (limited)	0.63	Limited: slope (limited) small stones (moderately limited)	0.63 0.33
70008: Goss-----	Moderately limited: shrink-swell (moderately limited)	0.45	Moderately limited: shrink-swell (moderately limited)	0.45	Limited: slope (limited) shrink-swell (moderately limited)	0.68 0.45	Very limited: low strength (very limited) shrink-swell (moderately limited)	1.00 0.45	Moderately limited: small stones (moderately limited) droughty (slightly limited)	0.36 0.13
70009: Goss-----	Limited: slope (limited) shrink-swell (moderately limited) large stones (moderately limited)	0.76 0.45 0.34	Limited: slope (limited) large stones (moderately limited) shrink-swell (moderately limited)	0.76 0.34 0.33	Very limited: slope (very limited) shrink-swell (moderately limited) large stones (moderately limited)	1.00 0.45 0.34	Very limited: low strength (very limited) slope (limited) shrink-swell (moderately limited)	1.00 0.63 0.45	Limited: slope (limited) small stones (moderately limited) droughty (slightly limited)	0.63 0.54 0.19
70010: Goss-----	Very limited: slope (very limited) shrink-swell (moderately limited) large stones (moderately limited)	1.00 0.45 0.38	Very limited: slope (very limited) large stones (moderately limited) shrink-swell (slightly limited)	1.00 0.38 0.25	Very limited: slope (very limited) shrink-swell (moderately limited) large stones (moderately limited)	1.00 0.45 0.38	Very limited: slope (very limited) shrink-swell (moderately limited) large stones (moderately limited)	1.00 0.45 0.38	Very limited: slope (very limited) large stones >30% (very limited) droughty (limited)	1.00 1.00 0.72
70011: Goss-----	Very limited: slope (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: slope (very limited) shrink-swell (slightly limited)	1.00 0.25	Very limited: slope (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: slope (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: slope (very limited) small stones (very limited) droughty (moderately limited)	1.00 1.00 0.47

Table 13.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings		Local roads and streets		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70011: Moko-----	Very limited: hard bedrock <20" (very limited) large stones (limited) slope (moderately limited)	1.00 0.87 0.45	Very limited: hard bedrock <40" (very limited) large stones (limited) slope (moderately limited)	1.00 0.87 0.45	Very limited: hard bedrock <20" (very limited) slope (very limited) large stones (limited)	1.00 1.00 0.87	Very limited: hard bedrock <20" (very limited) large stones (limited) low strength (slightly limited)	1.00 0.87 0.22	Very limited: shallow to bedrock (very limited) droughty (very limited) large stones (limited)	1.00 1.00 0.72
70012: Hoberg-----	Moderately limited: wetness (moderately limited)	0.59	Very limited: wetness (very limited)	1.00	Slightly limited: wetness (slightly limited) slope (slightly limited)	0.28 0.15	Very limited: low strength (very limited) wetness (slightly limited)	1.00 0.28	Slightly limited: wetness (slightly limited)	0.28
70014: Moko-----	Very limited: hard bedrock <20" (very limited) slope (very limited) large stones (very limited)	1.00 1.00 0.99	Very limited: hard bedrock <40" (very limited) slope (very limited) large stones (very limited)	1.00 1.00 0.99	Very limited: hard bedrock <20" (very limited) slope (very limited) large stones (very limited)	1.00 1.00 0.99	Very limited: hard bedrock <20" (very limited) slope (very limited) large stones (very limited)	1.00 1.00 0.99	Very limited: slope (very limited) shallow to bedrock (very limited) droughty (very limited)	1.00 1.00 1.00
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	
70040: Cliquot-----	Very limited: shrink-swell (very limited) wetness (slightly limited)	1.00 0.01	Limited: shrink-swell (limited) wetness (limited)	0.97 0.61	Very limited: shrink-swell (very limited) slope (limited)	1.00 0.68	Very limited: shrink-swell (very limited) low strength (very limited)	1.00 1.00	Slightly limited: too acid (slightly limited)	0.12
Bolivar-----	Slightly limited: large stones (slightly limited)	0.02	Limited: soft bedrock <40" (limited) large stones (slightly limited)	0.79 0.02	Limited: slope (limited) large stones (slightly limited)	0.68 0.02	Slightly limited: low strength (slightly limited) large stones (slightly limited)	0.22 0.02	Moderately limited: depth to bedrock (moderately limited) droughty (moderately limited) too acid (slightly limited)	0.53 0.31 0.18

Table 13.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings		Local roads and streets		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70041: Goss-----	Limited: slope (limited) shrink-swell (moderately limited) large stones (slightly limited)	0.76 0.45 0.19	Limited: slope (limited) shrink-swell (slightly limited) large stones (slightly limited)	0.76 0.23 0.19	Very limited: slope (very limited) shrink-swell (moderately limited) large stones (slightly limited)	1.00 0.45 0.19	Very limited: low strength (very limited) slope (limited) shrink-swell (moderately limited)	1.00 0.63 0.45	Limited: large stones (limited) slope (limited) small stones (moderately limited)	0.99 0.63 0.37
70042: Goss-----	Very limited: slope (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: slope (very limited) shrink-swell (moderately limited)	1.00 0.33	Very limited: slope (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: slope (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: slope (very limited) small stones (very limited) too acid (moderately limited)	1.00 1.00 0.42
70043: Sonsac-----	Limited: large stones (limited) slope (moderately limited) shrink-swell (moderately limited)	0.96 0.45 0.45	Very limited: hard bedrock <40" (very limited) large stones (limited) slope (moderately limited)	1.00 0.96 0.45	Very limited: slope (very limited) large stones (limited) shrink-swell (moderately limited)	1.00 0.96 0.45	Very limited: low strength (very limited) large stones (limited) shrink-swell (moderately limited)	1.00 0.96 0.45	Very limited: large stones >30% (very limited) droughty (moderately limited) depth to bedrock (slightly limited)	1.00 0.37 0.27
Moko-----	Very limited: hard bedrock <20" (very limited) slope (moderately limited)	1.00 0.45	Very limited: hard bedrock <40" (very limited) slope (moderately limited)	1.00 0.45	Very limited: hard bedrock <20" (very limited) slope (very limited)	1.00 1.00	Very limited: hard bedrock <20" (very limited) slope (slightly limited)	1.00 0.04	Very limited: shallow to bedrock (very limited) droughty (very limited) small stones (limited)	1.00 1.00 1.00
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	
70044: Sonsac-----	Very limited: slope (very limited) shrink-swell (moderately limited) depth to bedrock (slightly limited)	1.00 0.45 0.18	Very limited: hard bedrock <40" (very limited) slope (very limited) shrink-swell (moderately limited)	1.00 1.00 0.35	Very limited: slope (very limited) shrink-swell (moderately limited) depth to bedrock (slightly limited)	1.00 0.45 0.18	Very limited: slope (very limited) low strength (very limited) shrink-swell (moderately limited)	1.00 1.00 0.45	Very limited: slope (very limited) small stones (moderately limited) depth to bedrock (slightly limited)	1.00 0.33 0.09

Table 13.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings		Local roads and streets		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70044: Moko-----	Very limited: hard bedrock <20" (very limited) slope (very limited)	1.00 1.00	Very limited: hard bedrock <40" (very limited) slope (very limited)	1.00 1.00	Very limited: hard bedrock <20" (very limited) slope (very limited)	1.00 1.00	Very limited: hard bedrock <20" (very limited) slope (very limited)	1.00 1.00	Very limited: slope (very limited) shallow to bedrock (very limited) droughty (very limited)	1.00 1.00 1.00
70047: Wanda-----	Moderately limited: shrink-swell (moderately limited)	0.45	Moderately limited: shrink-swell (moderately limited)	0.36	Moderately limited: shrink-swell (moderately limited) slope (slightly limited)	0.45 0.15	Moderately limited: shrink-swell (moderately limited) low strength (slightly limited)	0.45 0.22	Not limited	
70048: Alsup-----	Very limited: shrink-swell (very limited) slope (limited) wetness (slightly limited)	1.00 0.76 0.22	Very limited: shrink-swell (very limited) wetness (limited) slope (limited)	1.00 0.90 0.76	Very limited: slope (very limited) shrink-swell (very limited)	1.00 1.00	Very limited: low strength (very limited) shrink-swell (very limited) slope (limited)	1.00 1.00 0.63	Limited: slope (limited) too acid (slightly limited)	0.63 0.24
70052: Arnica-----	Moderately limited: shrink-swell (moderately limited) wetness (moderately limited)	0.45 0.37	Limited: wetness (limited) shrink-swell (moderately limited)	0.99 0.45	Moderately limited: shrink-swell (moderately limited) slope (slightly limited)	0.45 0.15	Very limited: low strength (very limited) shrink-swell (moderately limited)	1.00 0.45	Slightly limited: too acid (slightly limited)	0.18
70053: Courtois-----	Moderately limited: shrink-swell (moderately limited)	0.45	Very limited: shrink-swell (very limited)	1.00	Moderately limited: shrink-swell (moderately limited) slope (slightly limited)	0.45 0.15	Moderately limited: shrink-swell (moderately limited)	0.45	Not limited	

Table 13.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings		Local roads and streets		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70054: Cliquot-----	Very limited: shrink-swell (very limited) slope (limited) wetness (slightly limited)	1.00 0.76 0.01	Very limited: shrink-swell (very limited) slope (limited) wetness (limited)	1.00 0.76 0.61	Very limited: shrink-swell (very limited) slope (very limited)	1.00 1.00	Very limited: shrink-swell (very limited) low strength (very limited) slope (limited)	1.00 1.00 0.63	Limited: slope (limited) large stones (moderately limited) small stones (moderately limited)	0.63 0.45 0.45
71254: Cotter-----	Very limited: flooding (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: flooding (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: flooding (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: low strength (very limited) flooding (rare) (limited) shrink-swell (moderately limited)	1.00 0.90 0.45	Not limited	
71750: Cleora-----	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00
73000: Pomme-----	Not limited		Not limited		Limited: slope (limited)	0.68	Not limited		Not limited	
73003: Ocie-----	Very limited: shrink-swell (very limited) slope (very limited) wetness (moderately limited)	1.00 1.00 0.45	Very limited: slope (very limited) wetness (very limited) shrink-swell (limited)	1.00 1.00 0.96	Very limited: slope (very limited) shrink-swell (very limited)	1.00 1.00	Very limited: low strength (very limited) slope (very limited) shrink-swell (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) small stones (very limited) too acid (slightly limited)	1.00 1.00 0.24
Gatewood-----	Very limited: shrink-swell (very limited) slope (very limited) wetness (limited)	1.00 1.00 0.71	Very limited: hard bedrock <40" (very limited) wetness (very limited) shrink-swell (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) shrink-swell (very limited) depth to bedrock (moderately limited)	1.00 1.00 0.53	Very limited: low strength (very limited) slope (very limited) shrink-swell (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) small stones (very limited) depth to bedrock (moderately limited)	1.00 1.00 0.46

Table 13.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings		Local roads and streets		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
73005: Ocie-----	Very limited: shrink-swell (very limited) slope (moderately limited) wetness (moderately limited)	1.00 0.45 0.45	Very limited: shrink-swell (very limited) wetness (very limited) slope (moderately limited)	1.00 1.00 0.45	Very limited: shrink-swell (very limited) slope (very limited) large stones (slightly limited)	1.00 1.00 0.01	Very limited: low strength (very limited) shrink-swell (very limited) slope (slightly limited)	1.00 1.00 0.04	Very limited: small stones (very limited) slope (slightly limited)	1.00 0.04
73007: Plato-----	Very limited: wetness (very limited) shrink-swell (very limited)	1.00 1.00	Very limited: wetness (very limited) shrink-swell (limited)	1.00 0.86	Very limited: shrink-swell (very limited) wetness (limited)	1.00 0.68	Very limited: shrink-swell (very limited) low strength (very limited) wetness (limited)	1.00 1.00 0.68	Limited: wetness (limited) too acid (slightly limited)	0.68 0.12
73008: Viraton-----	Limited: wetness (limited)	0.85	Very limited: wetness (very limited) shrink-swell (slightly limited)	1.00 0.10	Moderately limited: wetness (moderately limited) slope (slightly limited)	0.49 0.15	Very limited: low strength (very limited) wetness (moderately limited)	1.00 0.49	Moderately limited: wetness (moderately limited)	0.49
73059: Pomme-----	Not limited		Not limited		Not limited		Not limited		Not limited	
73075: Hobson-----	Moderately limited: wetness (moderately limited)	0.51	Very limited: wetness (very limited)	1.00	Slightly limited: wetness (slightly limited)	0.13	Slightly limited: wetness (slightly limited)	0.13	Moderately limited: too acid (moderately limited) wetness (slightly limited)	0.54 0.13
74625: Hartville-----	Limited: wetness (limited) shrink-swell (moderately limited)	0.85 0.45	Very limited: wetness (very limited) shrink-swell (very limited)	1.00 1.00	Limited: slope (limited) wetness (moderately limited) shrink-swell (moderately limited)	0.68 0.49 0.45	Very limited: low strength (very limited) wetness (moderately limited) shrink-swell (moderately limited)	1.00 0.49 0.45	Moderately limited: wetness (moderately limited)	0.49

Table 13.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings		Local roads and streets		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
74641: Secesh-----	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Moderately limited: flooding (moderately limited)	0.60
75375: Horsecreek----	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited) low strength (very limited)	1.00	Moderately limited: flooding (moderately limited)	0.60
75377: Racket-----	Very limited: flooding (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: flooding (very limited) shrink-swell (moderately limited) low strength (slightly limited)	1.00 0.45 0.22	Very limited: flooding (very limited)	1.00
75378: Sturkie-----	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited) low strength (limited)	1.00 0.78	Very limited: flooding (very limited)	1.00
99000: Pits, quarries	Not rated		Not rated		Not rated		Not rated		Not rated	
99001: Water-----	Not rated		Not rated		Not rated		Not rated		Not rated	
99004: Kanima-----	Very limited: slope (very limited)	1.00	Very limited: slope (very limited)	1.00	Very limited: slope (very limited)	1.00	Very limited: slope (very limited)	1.00	Very limited: small stones (very limited) slope (very limited) droughty (slightly limited)	1.00 1.00 0.28

Table 13.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings		Local roads and streets		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
99007: Dam-----	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 14.--Sanitary Facilities

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Septic tank absorption field		Sewage lagoons		Sanitary landfill (trench)		Sanitary landfill (area)		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
40000: Barden-----	Very limited: wetness (very limited) percs slowly (limited)	1.00 0.96	Very limited: wetness (very limited)	1.00	Limited: wetness (limited) too clayey (limited)	0.79 0.61	Limited: wetness (limited)	0.61	Moderately limited: wetness (moderately limited) too clayey (moderately limited)	0.40 0.31
40001: Bolivar-----	Very limited: depth to bedrock (very limited) percs slowly (slightly limited)	1.00 0.25	Very limited: depth to bedrock (very limited) slope (limited) seepage (moderately limited)	1.00 0.91 0.50	Very limited: depth to bedrock (very limited)	1.00	Very limited: depth to bedrock (very limited)	1.00	Very limited: depth to bedrock (very limited)	1.00
40004: Barden-----	Very limited: wetness (very limited) percs slowly (limited)	1.00 0.93	Very limited: wetness (very limited) slope (moderately limited)	1.00 0.31	Limited: wetness (limited) too clayey (limited)	0.79 0.62	Limited: wetness (limited)	0.61	Limited: hard to pack (limited) wetness (moderately limited) too clayey (moderately limited)	0.70 0.40 0.34
40005: Sylvania-----	Limited: wetness (limited) depth to bedrock (limited) percs slowly (limited)	0.89 0.79 0.71	Very limited: wetness (very limited) slope (very limited) depth to bedrock (limited)	1.00 1.00 0.79	Very limited: depth to bedrock (very limited) too clayey (limited) wetness (moderately limited)	1.00 0.95 0.52	Limited: depth to bedrock (limited) wetness (slightly limited) slope (slightly limited)	0.61 0.22 0.16	Limited: too clayey (limited) hard to pack (limited) depth to bedrock (limited)	0.90 0.70 0.61

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption field		Sewage lagoons		Sanitary landfill (trench)		Sanitary landfill (area)		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
40006: Barco-----	Very limited: depth to bedrock (very limited) percs slowly (slightly limited)	1.00 0.25	Very limited: depth to bedrock (very limited) seepage (moderately limited) slope (moderately limited)	1.00 0.50 0.31	Very limited: depth to bedrock (very limited) too acid (moderately limited) too clayey (slightly limited)	1.00 0.48 0.14	Very limited: depth to bedrock (very limited)	1.00	Very limited: depth to bedrock (very limited) too acid (moderately limited) too clayey (slightly limited)	1.00 0.48 0.02
Sylvania-----	Limited: percs slowly (limited) depth to bedrock (limited) wetness (limited)	0.74 0.64 0.63	Limited: wetness (limited) depth to bedrock (limited) slope (moderately limited)	0.78 0.64 0.31	Very limited: depth to bedrock (very limited) too clayey (moderately limited) too acid (moderately limited)	1.00 0.55 0.36	Moderately limited: depth to bedrock (moderately limited) wetness (slightly limited)	0.48 0.02	Moderately limited: depth to bedrock (moderately limited) too acid (moderately limited) too clayey (slightly limited)	0.48 0.36 0.28
40007: Eldorado-----	Slightly limited: large stones (slightly limited) percs slowly (slightly limited) slope (slightly limited)	0.30 0.25 0.04	Very limited: slope (very limited) seepage (moderately limited) large stones (slightly limited)	1.00 0.50 0.08	Very limited: too clayey (very limited) large stones (limited) slope (slightly limited)	1.00 0.64 0.04	Slightly limited: slope (slightly limited)	0.04	Very limited: too clayey (very limited) large stones (moderately limited) small stones (slightly limited)	1.00 0.33 0.11
40008: Parsons-----	Very limited: wetness (very limited) percs slowly (very limited)	1.00 1.00	Very limited: wetness (very limited)	1.00	Very limited: wetness (very limited) too clayey (very limited) too acid (slightly limited)	1.00 1.00 0.06	Very limited: wetness (very limited)	1.00	Very limited: too clayey (very limited) wetness (limited) too acid (slightly limited)	1.00 0.99 0.06
40009: Sylvania-----	Limited: depth to bedrock (limited) wetness (limited) percs slowly (limited)	0.90 0.89 0.71	Very limited: wetness (very limited) slope (very limited) depth to bedrock (limited)	1.00 1.00 0.90	Very limited: depth to bedrock (very limited) too clayey (limited) wetness (moderately limited)	1.00 0.84 0.52	Limited: depth to bedrock (limited) wetness (slightly limited)	0.81 0.22	Limited: depth to bedrock (limited) hard to pack (limited) too clayey (limited)	0.81 0.70 0.69

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption field		Sewage lagoons		Sanitary landfill (trench)		Sanitary landfill (area)		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
40010: Collinsville--	Very limited: depth to bedrock (very limited) slope (slightly limited)	1.00 0.04	Very limited: depth to bedrock (very limited) slope (very limited) seepage (moderately limited)	1.00 1.00 0.32	Very limited: depth to bedrock (very limited) seepage (limited) slope (slightly limited)	1.00 0.79 0.04	Very limited: depth to bedrock (very limited) slope (slightly limited)	1.00 0.04	Very limited: depth to bedrock (very limited) seepage (moderately limited) slope (slightly limited)	1.00 0.50 0.04
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	
44001: Quarles-----	Very limited: wetness (very limited) percs slowly (limited) flooding (rare) (moderately limited)	1.00 0.93 0.60	Very limited: wetness (very limited)	1.00	Very limited: wetness (very limited) flooding (rare) (moderately limited) too clayey (moderately limited)	1.00 0.60 0.31	Very limited: wetness (very limited) flooding (rare) (moderately limited)	1.00 0.60	Very limited: wetness (very limited) too clayey (slightly limited)	1.00 0.15
46000: Humansville---	Very limited: wetness (very limited) flooding (very limited) percs slowly (limited)	1.00 1.00 0.82	Very limited: flooding (very limited) wetness (very limited)	1.00 1.00	Very limited: wetness (very limited) flooding (very limited) too clayey (slightly limited)	1.00 1.00 0.20	Very limited: flooding (very limited) wetness (very limited)	1.00 1.00	Very limited: wetness (very limited) too clayey (slightly limited)	1.00 0.07
66000: Moniteau-----	Very limited: wetness (very limited) flooding (very limited) percs slowly (limited)	1.00 1.00 0.71	Very limited: flooding (very limited) wetness (very limited)	1.00 1.00	Very limited: wetness (very limited) flooding (very limited) too acid (slightly limited)	1.00 1.00 0.24	Very limited: flooding (very limited) wetness (very limited)	1.00 1.00	Very limited: wetness (very limited) too acid (slightly limited)	1.00 0.24
66001: Dameron-----	Very limited: flooding (very limited) percs slowly (slightly limited)	1.00 0.25	Very limited: flooding (very limited) seepage (moderately limited)	1.00 0.50	Very limited: flooding (very limited) too clayey (slightly limited)	1.00 0.24	Very limited: flooding (very limited)	1.00	Slightly limited: too clayey (slightly limited)	0.10

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption field		Sewage lagoons		Sanitary landfill (trench)		Sanitary landfill (area)		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70000: Bona-----	Limited: percs slowly (limited)	0.71	Limited: slope (limited) seepage (moderately limited)	0.91 0.50	Very limited: too clayey (very limited) too acid (moderately limited)	1.00 0.36	Not limited		Very limited: too clayey (very limited) hard to pack (limited) too acid (moderately limited)	1.00 0.70 0.36
70001: Bona-----	Limited: percs slowly (limited) slope (limited)	0.71 0.63	Very limited: slope (very limited)	1.00	Very limited: too clayey (very limited) slope (limited)	1.00 0.63	Limited: slope (limited)	0.63	Very limited: too clayey (very limited) small stones (limited) slope (limited)	1.00 0.98 0.63
70002: Alsup-----	Limited: wetness (limited) depth to bedrock (limited) percs slowly (limited)	0.89 0.82 0.71	Very limited: wetness (very limited) slope (limited) depth to bedrock (limited)	1.00 0.91 0.82	Very limited: depth to bedrock (very limited) too clayey (limited) wetness (moderately limited)	1.00 0.92 0.52	Limited: depth to bedrock (limited) wetness (slightly limited)	0.66 0.22	Limited: too clayey (limited) hard to pack (limited) depth to bedrock (limited)	0.83 0.70 0.66
70003: Alsup-----	Limited: wetness (limited) percs slowly (limited) slope (limited)	0.89 0.71 0.63	Very limited: slope (very limited) wetness (very limited) depth to bedrock (moderately limited)	1.00 1.00 0.42	Very limited: depth to bedrock (very limited) too clayey (limited) slope (limited)	1.00 1.00 0.63	Limited: slope (limited) depth to bedrock (slightly limited) wetness (slightly limited)	0.63 0.25 0.22	Limited: too clayey (limited) slope (limited) depth to bedrock (slightly limited)	0.99 0.63 0.25
70004: Alsup-----	Very limited: slope (very limited) depth to bedrock (limited) wetness (limited)	1.00 0.94 0.89	Very limited: slope (very limited) wetness (very limited) depth to bedrock (limited)	1.00 1.00 0.94	Very limited: slope (very limited) depth to bedrock (very limited) too clayey (limited)	1.00 1.00 0.61	Very limited: slope (very limited) depth to bedrock (limited) wetness (slightly limited)	1.00 0.90 0.22	Very limited: slope (very limited) depth to bedrock (limited) small stones (moderately limited)	1.00 0.90 0.34

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption field		Sewage lagoons		Sanitary landfill (trench)		Sanitary landfill (area)		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70006: Credlon-----	Very limited: wetness (very limited) percs slowly (very limited)	1.00 1.00	Very limited: wetness (very limited) seepage (moderately limited)	1.00 0.50	Very limited: too clayey (very limited) wetness (limited)	1.00 0.89	Limited: wetness (limited)	0.69	Very limited: too clayey (very limited) wetness (moderately limited) small stones (moderately limited)	1.00 0.45 0.41
70007: Cliquot-----	Limited: percs slowly (limited) wetness (limited) slope (limited)	0.93 0.75 0.63	Very limited: slope (very limited) wetness (limited) seepage (moderately limited)	1.00 0.98 0.50	Very limited: depth to bedrock (very limited) too clayey (limited) slope (limited)	1.00 0.72 0.63	Limited: slope (limited) depth to bedrock (slightly limited) wetness (slightly limited)	0.63 0.30 0.12	Limited: slope (limited) too clayey (moderately limited) too acid (moderately limited)	0.63 0.49 0.48
70008: Goss-----	Slightly limited: percs slowly (slightly limited)	0.25	Limited: slope (limited) seepage (moderately limited)	0.91 0.50	Very limited: too clayey (very limited)	1.00	Not limited		Very limited: too clayey (very limited) small stones (limited)	1.00 0.88
70009: Goss-----	Limited: slope (limited) large stones (moderately limited) percs slowly (slightly limited)	0.63 0.34 0.25	Very limited: slope (very limited) seepage (moderately limited) large stones (moderately limited)	1.00 0.50 0.49	Very limited: too clayey (very limited) slope (limited) too acid (moderately limited)	1.00 0.63 0.54	Limited: slope (limited)	0.63	Very limited: too clayey (very limited) slope (limited) too acid (moderately limited)	1.00 0.63 0.54
70010: Goss-----	Very limited: slope (very limited) large stones (moderately limited) percs slowly (slightly limited)	1.00 0.38 0.25	Very limited: slope (very limited) seepage (very limited) large stones (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) too clayey (limited) large stones (moderately limited)	1.00 0.97 0.31	Very limited: slope (very limited) seepage (limited)	1.00 0.75	Very limited: slope (very limited) too clayey (limited) small stones (limited)	1.00 0.93 0.71

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption field		Sewage lagoons		Sanitary landfill (trench)		Sanitary landfill (area)		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70011: Goss-----	Very limited: slope (very limited) percs slowly (slightly limited)	1.00 0.25 	Very limited: slope (very limited) seepage (very limited)	1.00 1.00 	Very limited: slope (very limited) too clayey (limited)	1.00 1.00 	Very limited: slope (very limited) seepage (limited)	1.00 0.75 	Very limited: slope (very limited) small stones >35% (very limited) too clayey (limited)	1.00 1.00 0.99
Moko-----	Very limited: depth to bedrock (very limited) large stones (limited) slope (slightly limited)	1.00 0.87 0.04 	Very limited: depth to bedrock (very limited) slope (very limited) large stones (moderately limited)	1.00 1.00 0.51 	Very limited: depth to bedrock (very limited) too clayey (slightly limited) slope (slightly limited)	1.00 0.12 0.04 	Very limited: depth to bedrock (very limited) slope (slightly limited)	1.00 0.04 	Very limited: depth to bedrock (very limited) large stones (limited) slope (slightly limited)	1.00 0.78 0.04
70012: Hoberg-----	Very limited: wetness (very limited) percs slowly (limited)	1.00 0.93 	Very limited: wetness (very limited) seepage (moderately limited) slope (moderately limited)	1.00 0.50 0.31 	Limited: wetness (limited) too clayey (limited) too acid (slightly limited)	0.99 0.78 0.24 	Limited: wetness (limited)	0.80 	Moderately limited: too clayey (moderately limited) wetness (moderately limited) too acid (slightly limited)	0.57 0.50 0.24
70014: Moko-----	Very limited: depth to bedrock (very limited) slope (very limited) large stones (very limited)	1.00 1.00 0.99 	Very limited: slope (very limited) depth to bedrock (very limited) large stones (limited)	1.00 1.00 0.95 	Very limited: slope (very limited) depth to bedrock (very limited) too clayey (slightly limited)	1.00 1.00 0.29 	Very limited: depth to bedrock (very limited) slope (very limited)	1.00 1.00 	Very limited: depth to bedrock (very limited) slope (very limited) large stones (limited)	1.00 1.00 0.99
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	
70040: Cliquot-----	Limited: depth to bedrock (limited) percs slowly (limited) wetness (moderately limited)	0.94 0.93 0.60 	Limited: depth to bedrock (limited) slope (limited) wetness (limited)	0.94 0.91 0.71 	Very limited: depth to bedrock (very limited) too clayey (very limited) too acid (moderately limited)	1.00 1.00 0.54 	Limited: depth to bedrock (limited)	0.90 	Very limited: too clayey (very limited) depth to bedrock (limited) hard to pack (limited)	1.00 0.90 0.70

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption field		Sewage lagoons		Sanitary landfill (trench)		Sanitary landfill (area)		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70040: Bolivar-----	Very limited: depth to bedrock (very limited) percs slowly (slightly limited) large stones (slightly limited)	1.00 0.25 0.02	Very limited: depth to bedrock (very limited) slope (limited) seepage (moderately limited)	1.00 0.91 0.50	Very limited: depth to bedrock (very limited) too acid (slightly limited) too clayey (slightly limited)	1.00 0.24 0.17	Very limited: depth to bedrock (very limited)	1.00	Very limited: depth to bedrock (very limited) too acid (slightly limited) too clayey (slightly limited)	1.00 0.24 0.05
70041: Goss-----	Limited: slope (limited) percs slowly (slightly limited) large stones (slightly limited)	0.63 0.25 0.19	Very limited: slope (very limited) seepage (very limited) large stones (slightly limited)	1.00 1.00 0.09	Very limited: too clayey (very limited) slope (limited) large stones (moderately limited)	1.00 0.63 0.41	Limited: seepage (limited) slope (limited)	0.75 0.63	Very limited: too clayey (very limited) hard to pack (limited) slope (limited)	1.00 0.70 0.63
70042: Goss-----	Very limited: slope (very limited) percs slowly (slightly limited)	1.00 0.25	Very limited: slope (very limited) seepage (moderately limited)	1.00 0.50	Very limited: slope (very limited) too clayey (very limited) too acid (moderately limited)	1.00 1.00 0.36	Very limited: slope (very limited)	1.00	Very limited: slope (very limited) small stones >35% (very limited) too clayey (very limited)	1.00 1.00 1.00
70043: Sonsac-----	Very limited: depth to bedrock (very limited) large stones (limited) percs slowly (slightly limited)	1.00 0.96 0.25	Very limited: depth to bedrock (very limited) slope (very limited) large stones (very limited)	1.00 1.00 1.00	Very limited: depth to bedrock (very limited) too clayey (limited) large stones (slightly limited)	1.00 1.00 0.04	Very limited: depth to bedrock (very limited) slope (slightly limited)	1.00 0.04	Very limited: depth to bedrock (very limited) too clayey (limited) large stones (limited)	1.00 0.99 0.95
Moko-----	Very limited: depth to bedrock (very limited) slope (slightly limited)	1.00 0.04	Very limited: depth to bedrock (very limited) slope (very limited)	1.00 1.00	Very limited: depth to bedrock (very limited) too clayey (slightly limited) slope (slightly limited)	1.00 0.17 0.04	Very limited: depth to bedrock (very limited) slope (slightly limited)	1.00 0.04	Very limited: depth to bedrock (very limited) small stones >35% (very limited) slope (slightly limited)	1.00 1.00 0.04
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption field		Sewage lagoons		Sanitary landfill (trench)		Sanitary landfill (area)		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70044: Sonsac-----	Very limited: depth to bedrock (very limited) slope (very limited) percs slowly (slightly limited)	1.00 1.00 0.25	Very limited: slope (very limited) depth to bedrock (very limited) seepage (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) depth to bedrock (very limited) too clayey (very limited)	1.00 1.00 1.00	Very limited: depth to bedrock (very limited) slope (very limited) seepage (limited)	1.00 1.00 1.00 0.75	Very limited: depth to bedrock (very limited) slope (very limited) too clayey (very limited)	1.00 1.00 1.00
Moko-----	Very limited: depth to bedrock (very limited) slope (very limited)	1.00 1.00	Very limited: slope (very limited) depth to bedrock (very limited)	1.00 1.00	Very limited: slope (very limited) depth to bedrock (very limited) too clayey (moderately limited)	1.00 1.00 0.31	Very limited: depth to bedrock (very limited) slope (very limited)	1.00 1.00	Very limited: depth to bedrock (very limited) slope (very limited) small stones >35% (very limited)	1.00 1.00 1.00
70047: Wanda-----	Slightly limited: percs slowly (slightly limited)	0.25	Moderately limited: seepage (moderately limited) slope (moderately limited)	0.50 0.31	Slightly limited: too clayey (slightly limited)	0.24	Not limited		Slightly limited: too clayey (slightly limited)	0.10
70048: Alsup-----	Limited: wetness (limited) percs slowly (limited) slope (limited)	0.89 0.71 0.63	Very limited: slope (very limited) wetness (very limited) depth to bedrock (limited)	1.00 1.00 0.61	Very limited: depth to bedrock (very limited) too clayey (limited) slope (limited)	1.00 0.85 0.63	Limited: slope (limited) depth to bedrock (moderately limited) wetness (slightly limited)	0.63 0.45 0.22	Limited: too clayey (limited) hard to pack (limited) slope (limited)	0.70 0.70 0.63
70052: Arnica-----	Very limited: wetness (very limited) percs slowly (slightly limited)	1.00 0.25	Very limited: wetness (very limited) seepage (moderately limited) slope (moderately limited)	1.00 0.50 0.31	Limited: wetness (limited) too clayey (slightly limited)	0.69 0.05	Moderately limited: wetness (moderately limited)	0.44	Moderately limited: wetness (moderately limited)	0.35

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption field		Sewage lagoons		Sanitary landfill (trench)		Sanitary landfill (area)		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70053: Courtois-----	Slightly limited: percs slowly (slightly limited)	0.25	Moderately limited: seepage (moderately limited) slope (moderately limited)	0.50 0.31	Very limited: too clayey (very limited) large stones (slightly limited)	1.00 0.13	Not limited		Very limited: too clayey (very limited) hard to pack (limited)	1.00 0.70
70054: Cliquot-----	Limited: percs slowly (limited) slope (limited) wetness (moderately limited)	0.93 0.63 0.60	Very limited: slope (very limited) wetness (limited) depth to bedrock (moderately limited)	1.00 0.71 0.44	Very limited: depth to bedrock (very limited) too clayey (very limited) slope (limited)	1.00 1.00 0.63	Limited: slope (limited) depth to bedrock (slightly limited)	0.63 0.30	Very limited: too clayey (very limited) hard to pack (limited) slope (limited)	1.00 0.70 0.63
71254: Cotter-----	Moderately limited: flooding (rare) (moderately limited) percs slowly (slightly limited)	0.60 0.25	Moderately limited: seepage (moderately limited)	0.50	Moderately limited: flooding (rare) (moderately limited) too clayey (slightly limited)	0.60 0.15	Moderately limited: flooding (rare) (moderately limited)	0.60	Slightly limited: too clayey (slightly limited)	0.03
71750: Cleora-----	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited) seepage (very limited)	1.00 1.00	Very limited: flooding (very limited) seepage (limited)	1.00 0.79	Very limited: flooding (very limited) seepage (limited)	1.00 0.75	Moderately limited: seepage (moderately limited)	0.50
73000: Pomme-----	Slightly limited: percs slowly (slightly limited)	0.25	Limited: slope (limited) seepage (moderately limited)	0.91 0.50	Very limited: too clayey (very limited) too acid (slightly limited)	1.00 0.18	Not limited		Very limited: small stones >35% (very limited) too clayey (very limited) too acid (slightly limited)	1.00 1.00 0.18

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption field		Sewage lagoons		Sanitary landfill (trench)		Sanitary landfill (area)		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
73003: Ocie-----	Very limited: slope (very limited) wetness (very limited) percs slowly (limited)	1.00 1.00 0.93	Very limited: slope (very limited) wetness (very limited) depth to bedrock (limited)	1.00 1.00 0.82	Very limited: slope (very limited) depth to bedrock (very limited) too clayey (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) depth to bedrock (limited) wetness (limited)	1.00 0.66 0.61	Very limited: slope (very limited) too clayey (very limited) hard to pack (limited)	1.00 1.00 0.70
Gatewood-----	Very limited: depth to bedrock (very limited) slope (very limited) wetness (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) wetness (very limited) depth to bedrock (very limited)	1.00 1.00 1.00	Very limited: wetness (very limited) slope (very limited) depth to bedrock (very limited)	1.00 1.00 1.00	Very limited: depth to bedrock (very limited) slope (very limited) wetness (limited)	1.00 1.00 0.86	Very limited: depth to bedrock (very limited) slope (very limited) too clayey (limited)	1.00 1.00 0.90
73005: Ocie-----	Very limited: wetness (very limited) percs slowly (limited) depth to bedrock (moderately limited)	1.00 0.93 0.54	Very limited: wetness (very limited) slope (very limited) depth to bedrock (moderately limited)	1.00 1.00 0.54	Very limited: depth to bedrock (very limited) too clayey (very limited) wetness (limited)	1.00 1.00 0.79	Limited: wetness (limited) depth to bedrock (moderately limited) slope (slightly limited)	0.61 0.39 0.04	Very limited: too clayey (very limited) hard to pack (limited) wetness (moderately limited)	1.00 0.70 0.40
73007: Plato-----	Very limited: wetness (very limited) percs slowly (very limited)	1.00 1.00	Very limited: wetness (very limited)	1.00	Very limited: wetness (very limited) too clayey (limited) too acid (moderately limited)	1.00 0.89 0.36	Very limited: wetness (very limited)	1.00	Limited: too clayey (limited) wetness (limited) too acid (moderately limited)	0.77 0.68 0.36
73008: Viraton-----	Very limited: wetness (very limited) percs slowly (very limited)	1.00 1.00	Very limited: wetness (very limited) seepage (moderately limited) slope (moderately limited)	1.00 0.50 0.31	Very limited: wetness (very limited) too clayey (very limited) too acid (slightly limited)	1.00 1.00 0.06	Limited: wetness (limited)	0.93	Very limited: too clayey (very limited) hard to pack (limited) wetness (moderately limited)	1.00 0.70 0.57

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption field		Sewage lagoons		Sanitary landfill (trench)		Sanitary landfill (area)		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
73059: Pomme-----	Slightly limited: percs slowly (slightly limited)	0.25	Moderately limited: seepage (moderately limited)	0.50	Very limited: too clayey (very limited) too acid (slightly limited)	1.00 0.12	Not limited		Limited: too clayey (very limited) too acid (slightly limited)	0.99 0.12
73075: Hobson-----	Very limited: wetness (very limited) percs slowly (limited)	1.00 0.93	Very limited: wetness (very limited)	1.00	Limited: wetness (limited) too clayey (moderately limited) too acid (slightly limited)	0.89 0.36 0.12	Limited: wetness (limited)	0.69	Moderately limited: wetness (moderately limited) too clayey (slightly limited) too acid (slightly limited)	0.45 0.18 0.12
74625: Hartville-----	Very limited: wetness (very limited) percs slowly (limited)	1.00 0.93	Very limited: wetness (very limited) slope (limited)	1.00 0.91	Very limited: wetness (very limited) too clayey (limited)	1.00 0.70	Limited: wetness (limited)	0.93	Moderately limited: wetness (moderately limited) too clayey (moderately limited)	0.57 0.45
74641: Secesh-----	Very limited: flooding (very limited) percs slowly (slightly limited)	1.00 0.25	Very limited: flooding (very limited) seepage (moderately limited)	1.00 0.50	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Slightly limited: small stones (slightly limited)	0.03
75375: Horsecreek----	Very limited: flooding (very limited) percs slowly (slightly limited)	1.00 0.25	Very limited: flooding (very limited) seepage (moderately limited)	1.00 0.50	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Not limited	
75377: Racket-----	Very limited: flooding (very limited) poor filter (very limited) percs slowly (slightly limited)	1.00 1.00 0.25	Very limited: flooding (very limited) seepage (very limited)	1.00 1.00	Very limited: flooding (very limited) seepage (very limited)	1.00 1.00	Very limited: flooding (very limited) seepage (very limited)	1.00 1.00	Very limited: seepage (very limited)	1.00

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption field		Sewage lagoons		Sanitary landfill (trench)		Sanitary landfill (area)		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
75378: Sturkie-----	Very limited: flooding (very limited) percs slowly (slightly limited)	1.00 0.25	Very limited: flooding (very limited) seepage (moderately limited)	1.00 0.50	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Not limited	
99000: Pits, quarries	Not rated		Not rated		Not rated		Not rated		Not rated	
99001: Water-----	Not rated		Not rated		Not rated		Not rated		Not rated	
99004: Kanima-----	Very limited: slope (very limited) percs slowly (slightly limited)	1.00 0.25	Very limited: slope (very limited) seepage (moderately limited)	1.00 0.50	Very limited: slope (very limited)	1.00	Very limited: slope (very limited)	1.00	Very limited: small stones >35% (very limited) slope (very limited)	1.00 1.00
99007: Dam-----	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 15.--Construction Materials and Excavating

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Roadfill		Sand		Gravel		Topsoil		Shallow excavations	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
40000: Barden-----	Very limited: low strength (very limited) shrink-swell (limited) wetness (slightly limited)	1.00 0.71 0.12	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Limited: too clayey (limited) wetness (slightly limited)	0.79 0.12	Very limited: wetness (very limited) too clayey (moderately limited) cutbanks cave (slightly limited)	1.00 0.31 0.29
40001: Bolivar-----	Very limited: depth to bedrock (very limited) shrink-swell (slightly limited)	1.00 0.06	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Moderately limited: depth to bedrock (moderately limited) too sandy (slightly limited)	0.56 0.16	Limited: depth to bedrock (limited) cutbanks cave (slightly limited) soft bedrock <40" (slightly limited)	0.90 0.29 0.01
40004: Barden-----	Very limited: low strength (very limited) shrink-swell (very limited) wetness (slightly limited)	1.00 1.00 0.12	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: too clayey (very limited) wetness (slightly limited)	1.00 0.12	Very limited: wetness (very limited) too clayey (moderately limited) cutbanks cave (slightly limited)	1.00 0.34 0.29
40005: Sylvania-----	Very limited: low strength (very limited) shrink-swell (very limited) depth to bedrock (limited)	1.00 1.00 0.61	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: too clayey (very limited) large surface stones (limited) too acid (moderately limited)	1.00 0.70 0.36	Limited: too clayey (limited) wetness (limited) cutbanks cave (slightly limited)	0.90 0.90 0.29

Table 15.--Construction Materials and Excavating--Continued

Map symbol and soil name	Roadfill		Sand		Gravel		Topsoil		Shallow excavations	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
40006: Barco-----	Very limited: depth to bedrock (very limited) low strength (limited) shrink-swell (slightly limited)	1.00 0.78 0.27	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Limited: depth to bedrock (limited) too acid (moderately limited) too sandy (slightly limited)	0.93 0.48 0.08	Moderately limited: soft bedrock <40" (moderately limited) cutbanks cave (slightly limited) too clayey (slightly limited)	0.35 0.29 0.02
Sylvania-----	Limited: low strength (limited) shrink-swell (limited) depth to bedrock (moderately limited)	0.78 0.69 0.48	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Limited: too clayey (limited) area reclaim (limited) too acid (moderately limited)	0.99 0.92 0.42	Very limited: cutbanks cave (very limited) wetness (limited) too clayey (slightly limited)	1.00 0.64 0.28
40007: Eldorado-----	Moderately limited: shrink-swell (moderately limited) large stones (slightly limited) low strength (slightly limited)	0.39 0.30 0.22	Improbable: excess fines (thickest layer) excess fines (bottom layer) small stones (thickest layer)	1.00 1.00 0.38	Possible: excess fines (bottom layer) excess fines (thickest layer) small stones (thickest layer)	0.99 0.99 0.38	Very limited: small stones (very limited) area reclaim (very limited) large surface stones (limited)	1.00 1.00 0.70	Very limited: too clayey (very limited) large stones (slightly limited) cutbanks cave (slightly limited)	1.00 0.30 0.29
40008: Parsons-----	Very limited: low strength (very limited) shrink-swell (very limited) wetness (very limited)	1.00 1.00 1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: too clayey (very limited) wetness (very limited) too acid (slightly limited)	1.00 1.00 0.24	Very limited: wetness (very limited) too clayey (very limited) cutbanks cave (slightly limited)	1.00 1.00 0.29
40009: Sylvania-----	Very limited: shrink-swell (very limited) depth to bedrock (limited)	1.00 0.81	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: too clayey (very limited) too acid (moderately limited) depth to bedrock (moderately limited)	1.00 0.42 0.36	Limited: wetness (limited) too clayey (limited) cutbanks cave (slightly limited)	0.90 0.69 0.29

Table 15.--Construction Materials and Excavating--Continued

Map symbol and soil name	Roadfill		Sand		Gravel		Topsoil		Shallow excavations	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
40010: Collinsville--	Very limited: depth to bedrock (very limited)	1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: depth to bedrock (very limited) small stones (very limited) too sandy (limited)	1.00 1.00 0.89	Very limited: hard bedrock <40" (very limited) cutbanks cave (slightly limited) slope (slightly limited)	1.00 0.29 0.04
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	
44001: Quarles-----	Very limited: wetness (very limited) shrink-swell (limited)	1.00 0.84	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: wetness (very limited) too acid (slightly limited)	1.00 1.00 0.12	Very limited: wetness (very limited) cutbanks cave (slightly limited) too clayey (slightly limited)	1.00 0.29 0.15
46000: Humansville---	Very limited: low strength (very limited) wetness (very limited) shrink-swell (slightly limited)	1.00 1.00 0.20	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: wetness (very limited) too clayey (limited)	1.00 1.00 0.63	Very limited: wetness (very limited) flooding (moderately limited) cutbanks cave (slightly limited)	1.00 0.60 0.29
66000: Moniteau-----	Very limited: low strength (very limited) wetness (very limited) shrink-swell (slightly limited)	1.00 1.00 0.30	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: wetness (very limited) too clayey (slightly limited) too acid (slightly limited)	1.00 1.00 0.26 0.24	Very limited: wetness (very limited) flooding (moderately limited) cutbanks cave (slightly limited)	1.00 0.60 0.29
66001: Dameron-----	Very limited: low strength (very limited) shrink-swell (slightly limited)	1.00 0.29	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Possible: excess fines (thickest layer) possible source (bottom layer)	1.00 0.33	Limited: too clayey (limited) small stones (moderately limited)	0.69 0.50	Very limited: cutbanks cave (very limited) flooding (moderately limited) too clayey (slightly limited)	1.00 0.60 0.10

Table 15.--Construction Materials and Excavating--Continued

Map symbol and soil name	Roadfill		Sand		Gravel		Topsoil		Shallow excavations	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70000:										
Bona-----	Very limited: low strength (very limited) shrink-swell (slightly limited)	1.00 0.30	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: small stones (very limited)	1.00	Very limited: cutbanks cave (very limited) too clayey (very limited)	1.00 1.00
70001:										
Bona-----	Moderately limited: shrink-swell (moderately limited)	0.41	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Possible: excess fines (bottom layer) excess fines (thickest layer)	1.00 0.60	Very limited: small stones (very limited) too clayey (very limited) slope (limited)	1.00 1.00 0.63	Very limited: cutbanks cave (very limited) too clayey (very limited) slope (limited)	1.00 1.00 0.63
70002:										
Alsop-----	Very limited: low strength (very limited) shrink-swell (limited) depth to bedrock (limited)	1.00 1.00 0.66	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: too clayey (very limited) too acid (slightly limited) depth to bedrock (slightly limited)	1.00 0.30 0.26	Limited: wetness (limited) too clayey (limited) cutbanks cave (slightly limited)	0.90 0.83 0.29
70003:										
Alsop-----	Very limited: low strength (very limited) shrink-swell (limited) depth to bedrock (slightly limited)	1.00 0.76 0.25	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Very limited: too clayey (very limited) slope (limited) too acid (slightly limited)	1.00 0.63 0.12	Limited: too clayey (limited) wetness (limited) slope (limited)	0.99 0.90 0.63
70004:										
Alsop-----	Limited: slope (limited) depth to bedrock (limited) shrink-swell (limited)	0.92 0.90 0.79	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Possible: excess fines (bottom layer) excess fines (thickest layer)	0.89 0.89	Very limited: slope (very limited) too clayey (very limited) small stones (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) wetness (limited) too clayey (moderately limited)	1.00 0.90 0.31

Table 15.--Construction Materials and Excavating--Continued

Map symbol and soil name	Roadfill		Sand		Gravel		Topsoil		Shallow excavations	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70006: Credlon-----	Limited: shrink-swell (limited) wetness (slightly limited) low strength (slightly limited)	0.70 0.26 0.22	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Possible: excess fines (thickest layer) excess fines (bottom layer)	1.00 0.99	Very limited: too clayey (very limited) area reclaim (very limited) dense layer (limited)	1.00 1.00 0.93	Very limited: wetness (very limited) cutbanks cave (very limited) too clayey (very limited)	1.00 1.00 1.00
70007: Cliquot-----	Limited: shrink-swell (limited) depth to bedrock (slightly limited)	0.74 0.30	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: small stones (very limited) slope (limited) too acid (slightly limited)	1.00 0.63 0.24	Very limited: cutbanks cave (very limited) wetness (limited) slope (limited)	1.00 0.78 0.63
70008: Goss-----	Very limited: low strength (very limited) shrink-swell (moderately limited)	1.00 0.45	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Very limited: too clayey (very limited) small stones (very limited) area reclaim (very limited)	1.00 1.00 1.00	Very limited: cutbanks cave (very limited) too clayey (very limited)	1.00 1.00
70009: Goss-----	Very limited: low strength (very limited) large stones (moderately limited) shrink-swell (moderately limited)	1.00 0.34 0.33	Improbable: excess fines (thickest layer) excess fines (bottom layer) small stones (thickest layer)	1.00 1.00 0.50	Possible: excess fines (bottom layer) possible source (thickest layer) small stones (thickest layer)	0.99 0.50 0.50	Very limited: too clayey (very limited) small stones (very limited) area reclaim (very limited)	1.00 1.00 1.00	Very limited: too clayey (very limited) slope (limited) large stones (moderately limited)	1.00 0.63 0.34
70010: Goss-----	Limited: slope (limited) large stones (moderately limited) shrink-swell (slightly limited)	0.92 0.38 0.25	Improbable: excess fines (thickest layer) excess fines (bottom layer) small stones (thickest layer)	1.00 1.00 0.10	Possible: excess fines (bottom layer) excess fines (thickest layer) small stones (thickest layer)	0.99 0.99 0.10	Very limited: slope (very limited) too clayey (very limited) large stones >25% (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) cutbanks cave (very limited) too clayey (limited)	1.00 1.00 0.93

Table 15.--Construction Materials and Excavating--Continued

Map symbol and soil name	Roadfill		Sand		Gravel		Topsoil		Shallow excavations	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70011: Goss-----	Very limited: low strength (very limited) slope (limited) shrink-swell (slightly limited)	1.00 0.92 0.25	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Possible: excess fines (bottom layer) possible source (thickest layer)	1.00 0.25	Very limited: slope (very limited) small stones (very limited) too clayey (limited)	1.00 1.00 0.94	Very limited: slope (very limited) cutbanks cave (very limited) too clayey (limited)	1.00 1.00 0.99
Moko-----	Very limited: depth to bedrock (very limited) large stones (limited) low strength (slightly limited)	1.00 0.87 0.22	Improbable: excess fines (thickest layer) excess fines (bottom layer) small stones (bottom layer)	1.00 1.00 1.00	Improbable: excess fines (thickest layer) small stones (bottom layer) excess fines (bottom layer)	1.00 1.00 1.00	Very limited: depth to bedrock (very limited) small stones (very limited) large stones (limited)	1.00 1.00 0.91	Very limited: hard bedrock <40" (very limited) large stones (limited) cutbanks cave (slightly limited)	1.00 0.87 0.29
70012: Hoberg-----	Moderately limited: wetness (moderately limited)	0.48	Improbable: excess fines (thickest layer) excess fines (bottom layer) small stones (thickest layer)	1.00 1.00 0.66	Possible: excess fines (thickest layer) small stones (thickest layer) small stones (bottom layer)	0.99 0.66 0.66	Very limited: area reclaim (very limited) dense layer (limited) wetness (moderately limited)	1.00 0.95 0.48	Very limited: wetness (very limited) dense layer (limited) too clayey (moderately limited)	1.00 0.95 0.57
70014: Moko-----	Very limited: depth to bedrock (very limited) large stones (very limited) slope (limited)	1.00 0.99 0.92	Improbable: excess fines (thickest layer) excess fines (bottom layer) small stones (thickest layer)	1.00 1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer) small stones (thickest layer)	1.00 1.00 1.00	Very limited: depth to bedrock (very limited) slope (very limited) small stones (limited)	1.00 1.00 0.97	Very limited: hard bedrock <40" (very limited) slope (very limited) large stones (very limited)	1.00 1.00 0.99
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	
70040: Cliquot-----	Very limited: low strength (very limited) shrink-swell (limited) depth to bedrock (limited)	1.00 0.97 0.90	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: too clayey (very limited) small stones (very limited) too acid (moderately limited)	1.00 1.00 0.54	Very limited: too clayey (very limited) wetness (limited) cutbanks cave (slightly limited)	1.00 0.61 0.29

Table 15.--Construction Materials and Excavating--Continued

Map symbol and soil name	Roadfill		Sand		Gravel		Topsoil		Shallow excavations	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70040: Bolivar-----	Very limited: depth to bedrock (very limited) low strength (slightly limited) large stones (slightly limited)	1.00 0.22 0.02	Improbable: excess fines (thickest layer) excess fines (bottom layer) small stones (thickest layer)	1.00 1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer) small stones (thickest layer)	1.00 1.00 1.00	Very limited: depth to bedrock (very limited) too clayey (moderately limited) too sandy (moderately limited)	1.00 0.58 0.34	Limited: soft bedrock <40" (limited) cutbanks cave (slightly limited) too clayey (slightly limited)	0.79 0.29 0.05
70041: Goss-----	Very limited: low strength (very limited) shrink-swell (slightly limited) large stones (slightly limited)	1.00 0.23 0.19	Improbable: excess fines (thickest layer) excess fines (bottom layer) small stones (thickest layer)	1.00 1.00 0.66	Improbable: excess fines (bottom layer) excess fines (thickest layer) small stones (thickest layer)	1.00 1.00 0.66	Very limited: small stones (very limited) large stones >25% (very limited) slope (limited)	1.00 1.00 0.63	Very limited: too clayey (very limited) slope (limited) cutbanks cave (slightly limited)	1.00 0.63 0.29
70042: Goss-----	Limited: slope (limited) shrink-swell (moderately limited)	0.92 0.33	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Possible: possible source (bottom layer) possible source (thickest layer)	0.50 0.42	Very limited: slope (very limited) small stones (very limited) area reclaim (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) cutbanks cave (very limited) too clayey (very limited)	1.00 1.00 1.00
70043: Sonsac-----	Very limited: depth to bedrock (very limited) low strength (very limited) large stones (limited)	1.00 1.00 0.96	Improbable: excess fines (thickest layer) excess fines (bottom layer) small stones (thickest layer)	1.00 1.00 0.66	Improbable: excess fines (bottom layer) excess fines (thickest layer) small stones (thickest layer)	1.00 1.00 0.66	Very limited: too clayey (very limited) large stones >25% (very limited) small stones (very limited)	1.00 1.00 1.00	Very limited: hard bedrock <40" (very limited) too clayey (limited) large stones (limited)	1.00 0.99 0.96
Moko-----	Very limited: depth to bedrock (very limited)	1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Possible: excess fines (bottom layer) excess fines (thickest layer)	0.75 0.75	Very limited: depth to bedrock (very limited) small stones (very limited) too clayey (moderately limited)	1.00 1.00 0.59	Very limited: hard bedrock <40" (very limited) cutbanks cave (slightly limited) slope (slightly limited)	1.00 0.29 0.04
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 15.--Construction Materials and Excavating--Continued

Map symbol and soil name	Roadfill		Sand		Gravel		Topsoil		Shallow excavations	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70044: Sonsac-----	Very limited: depth to bedrock (very limited) low strength (very limited) slope (limited)	1.00 1.00 0.92	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: slope (very limited) too clayey (very limited) small stones (very limited)	1.00 1.00 1.00	Very limited: hard bedrock <40" (very limited) slope (very limited) too clayey (very limited)	1.00 1.00 1.00
Moko-----	Very limited: depth to bedrock (very limited) slope (limited)	1.00 0.92	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Possible: excess fines (bottom layer) excess fines (thickest layer)	0.99 0.99	Very limited: depth to bedrock (very limited) slope (very limited) small stones (very limited)	1.00 1.00 1.00	Very limited: hard bedrock <40" (very limited) slope (very limited) cutbanks cave (slightly limited)	1.00 1.00 0.29
70047: Wanda-----	Moderately limited: shrink-swell (moderately limited) low strength (slightly limited)	0.36 0.22	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Not limited		Very limited: cutbanks cave (very limited) too clayey (slightly limited)	1.00 0.10
70048: Alsup-----	Very limited: low strength (very limited) shrink-swell (very limited) depth to bedrock (moderately limited)	1.00 1.00 0.45	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: too clayey (very limited) large surface stones (limited) slope (limited)	1.00 0.70 0.63	Very limited: cutbanks cave (very limited) wetness (limited) too clayey (limited)	1.00 0.90 0.70
70052: Arnica-----	Very limited: low strength (very limited) shrink-swell (moderately limited) wetness (slightly limited)	1.00 0.45 0.03	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Moderately limited: too clayey (moderately limited) wetness (slightly limited)	0.37 0.03	Limited: wetness (limited) cutbanks cave (slightly limited)	0.99 0.29

Table 15.--Construction Materials and Excavating--Continued

Map symbol and soil name	Roadfill		Sand		Gravel		Topsoil		Shallow excavations	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70053: Courtois-----	Very limited: shrink-swell (very limited)	1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Limited: too clayey (limited)	0.78	Very limited: too clayey (very limited) cutbanks cave (slightly limited)	1.00 0.29
70054: Cliquot-----	Very limited: shrink-swell (very limited) low strength (very limited) depth to bedrock (slightly limited)	1.00 1.00 0.30	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Possible: excess fines (thickest layer) excess fines (bottom layer)	1.00 0.99	Very limited: too clayey (very limited) area reclaim (very limited) large surface stones (limited)	1.00 1.00 0.70	Very limited: too clayey (very limited) slope (limited) wetness (limited)	1.00 0.63 0.61
71254: Cotter-----	Very limited: low strength (very limited) shrink-swell (moderately limited)	1.00 0.45	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Slightly limited: too clayey (slightly limited)	0.23	Slightly limited: cutbanks cave (slightly limited) too clayey (slightly limited)	0.29 0.03
71750: Cleora-----	Not limited		Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Moderately limited: too sandy (moderately limited)	0.42	Moderately limited: flooding (moderately limited) cutbanks cave (slightly limited)	0.60 0.29
73000: Pomme-----	Not limited		Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Possible: possible source (thickest layer) possible source (bottom layer)	0.46 0.15	Very limited: small stones (very limited) area reclaim (very limited) too clayey (limited)	1.00 1.00 0.77	Very limited: cutbanks cave (very limited) too clayey (very limited)	1.00 1.00
73003: Ocie-----	Very limited: low strength (very limited) shrink-swell (limited) slope (limited)	1.00 0.96 0.92	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: slope (very limited) too clayey (very limited) small stones (moderately limited)	1.00 1.00 0.32	Very limited: slope (very limited) too clayey (very limited) wetness (very limited)	1.00 1.00 1.00

Table 15.--Construction Materials and Excavating--Continued

Map symbol and soil name	Roadfill		Sand		Gravel		Topsoil		Shallow excavations	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
73003: Gatewood-----	Very limited: low strength (very limited) depth to bedrock (very limited) shrink-swell (very limited)	1.00 1.00 1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Very limited: depth to bedrock (very limited) slope (very limited) too clayey (very limited)	1.00 1.00 1.00	Very limited: hard bedrock <40" (very limited) slope (very limited) wetness (very limited)	1.00 1.00 1.00
73005: Ocie-----	Very limited: low strength (very limited) shrink-swell (very limited) depth to bedrock (moderately limited)	1.00 1.00 0.39	Improbable: excess fines (thickest layer) excess fines (bottom layer) small stones (thickest layer)	1.00 1.00 0.30	Improbable: excess fines (bottom layer) excess fines (thickest layer) small stones (thickest layer)	1.00 1.00 0.30	Very limited: too clayey (very limited) small stones (slightly limited) wetness (slightly limited)	1.00 0.12 0.12	Very limited: cutbanks cave (very limited) too clayey (very limited) wetness (very limited)	1.00 1.00 1.00
73007: Plato-----	Very limited: low strength (very limited) wetness (limited) shrink-swell (limited)	1.00 0.91 0.86	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: dense layer <20" (very limited) too clayey (very limited) wetness (limited)	1.00 1.00 0.91	Very limited: dense layer <20" (very limited) wetness (very limited) too clayey (limited)	1.00 1.00 0.77
73008: Viraton-----	Limited: wetness (limited) shrink-swell (slightly limited)	0.76 0.10	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Very limited: dense layer <20" (very limited) wetness (limited)	1.00 0.76	Very limited: dense layer <20" (very limited) wetness (very limited) cutbanks cave (very limited)	1.00 1.00 1.00
73059: Pomme-----	Not limited		Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Slightly limited: area reclaim (slightly limited)	0.08	Very limited: cutbanks cave (very limited) too clayey (very limited)	1.00 0.99

Table 15.--Construction Materials and Excavating--Continued

Map symbol and soil name	Roadfill		Sand		Gravel		Topsoil		Shallow excavations	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
73075: Hobson-----	Slightly limited: wetness (slightly limited)	0.26	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Very limited: dense layer <20" (very limited) too clayey (moderately limited) wetness (slightly limited)	1.00 0.35 0.26	Very limited: dense layer <20" (very limited) wetness (very limited) cutbanks cave (slightly limited)	1.00 1.00 0.29
74625: Hartville----	Very limited: low strength (very limited) shrink-swell (very limited) wetness (limited)	1.00 1.00 0.76	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: too clayey (very limited) wetness (limited) too acid (slightly limited)	1.00 0.76 0.12	Very limited: wetness (very limited) too clayey (moderately limited) cutbanks cave (slightly limited)	1.00 0.45 0.29
74641: Secesh-----	Not limited		Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: small stones (very limited) area reclaim (limited) too clayey (slightly limited)	1.00 0.68 0.25	Very limited: cutbanks cave (very limited) flooding (moderately limited)	1.00 0.60
75375: Horsecreek----	Very limited: low strength (very limited)	1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Not limited		Moderately limited: flooding (moderately limited) cutbanks cave (slightly limited)	0.60 0.29
75377: Racket-----	Not limited		Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Limited: area reclaim (limited) too sandy (slightly limited) small stones (slightly limited)	0.68 0.21 0.18	Very limited: cutbanks cave (very limited) flooding (moderately limited)	1.00 0.60

Table 15.--Construction Materials and Excavating--Continued

Map symbol and soil name	Roadfill		Sand		Gravel		Topsoil		Shallow excavations	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
75378: Sturkie-----	Limited: low strength (limited)	0.78	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Not limited		Moderately limited: flooding (moderately limited) cutbanks cave (slightly limited)	0.60 0.29
99000: Pits, quarries	Not rated		Not rated		Not rated		Not rated		Not rated	
99001: Water-----	Not rated		Not rated		Not rated		Not rated		Not rated	
99004: Kanima-----	Very limited: slope (very limited)	1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Possible: excess fines (thickest layer) excess fines (bottom layer)	0.75 0.75	Very limited: small stones (very limited) area reclaim (very limited) slope (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) cutbanks cave (slightly limited)	1.00 0.29
99007: Dam-----	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 16.--Water Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pond reservoir areas		Drainage		Irrigation		Terraces and diversions		Grassed waterways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
40000: Barden-----	Not limited		Moderately limited: percs slowly (moderately limited)	0.39	Moderately limited: erodes easily (moderately limited) percs slowly (moderately limited)	0.60 0.39	Moderately limited: erodes easily (moderately limited) wetness (slightly limited)	0.60 0.28	Moderately limited: erodes easily (moderately limited) wetness (slightly limited)	0.60 0.28
40001: Bolivar-----	Limited: depth to bedrock (limited) seepage (moderately limited) slope (moderately limited)	0.74 0.50 0.31	Limited: slope (limited) depth to bedrock (slightly limited)	0.98 0.06	Limited: slope (limited) depth to bedrock (slightly limited)	0.98 0.06	Very limited: depth to bedrock (very limited) slope (moderately limited)	1.00 0.31	Limited: depth to bedrock (limited) slope (moderately limited)	0.74 0.31
40004: Barden-----	Slightly limited: slope (slightly limited)	0.10	Moderately limited: slope (moderately limited) percs slowly (moderately limited)	0.40 0.39	Moderately limited: erodes easily (moderately limited) slope (moderately limited) percs slowly (moderately limited)	0.60 0.40 0.39	Moderately limited: erodes easily (moderately limited) wetness (slightly limited) slope (slightly limited)	0.60 0.28 0.10	Moderately limited: erodes easily (moderately limited) wetness (slightly limited) slope (slightly limited)	0.60 0.28 0.10
40005: Sylvania-----	Limited: slope (limited) depth to bedrock (limited)	0.80 0.64	Very limited: slope (very limited) large surface stones (limited) percs slowly (slightly limited)	1.00 0.70 0.13	Very limited: slope (very limited) large surface stones (limited) percs slowly (slightly limited)	1.00 0.70 0.13	Limited: slope (limited) large surface stones (limited) depth to bedrock (limited)	0.80 0.70 0.61	Limited: slope (limited) large surface stones (limited) depth to bedrock (limited)	0.80 0.70 0.64
40006: Barco-----	Limited: depth to bedrock (limited) seepage (moderately limited) slope (slightly limited)	0.84 0.50 0.10	Moderately limited: slope (moderately limited) depth to bedrock (slightly limited)	0.40 0.27	Moderately limited: slope (moderately limited) depth to bedrock (slightly limited)	0.40 0.27	Very limited: depth to bedrock (very limited) slope (slightly limited)	1.00 0.10	Limited: depth to bedrock (limited) slope (slightly limited)	0.84 0.10

Table 16.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Drainage		Irrigation		Terraces and diversions		Grassed waterways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
40006: Sylvania-----	Moderately limited: depth to bedrock (moderately limited) slope (slightly limited)	0.58 0.10	Moderately limited: slope (moderately limited) percs slowly (slightly limited)	0.40 0.17	Moderately limited: slope (moderately limited) percs slowly (slightly limited)	0.40 0.17	Moderately limited: depth to bedrock (moderately limited) slope (slightly limited)	0.48 0.10	Moderately limited: depth to bedrock (moderately limited) slope (slightly limited)	0.58 0.10
40007: Eldorado-----	Limited: slope (limited) seepage (moderately limited)	0.70 0.50	Very limited: slope (very limited) large stones (very limited) large surface stones (limited)	1.00 1.00 0.70	Very limited: slope (very limited) large surface stones (limited) large stones (slightly limited)	1.00 0.70 0.30	Very limited: large stones (very limited) slope (limited) large surface stones (limited)	1.00 0.70 0.70	Very limited: large stones (very limited) slope (limited) large surface stones (limited)	1.00 0.70 0.70
40008: Parsons-----	Not limited		Very limited: percs slowly (very limited)	1.00	Very limited: percs slowly (very limited) erodes easily (moderately limited)	1.00 0.60	Limited: wetness (limited) erodes easily (moderately limited)	0.99 0.60	Limited: wetness (limited) erodes easily (moderately limited)	0.99 0.60
40009: Sylvania-----	Limited: depth to bedrock (limited) slope (moderately limited)	0.68 0.45	Very limited: slope (very limited) percs slowly (slightly limited)	1.00 0.13	Very limited: slope (very limited) percs slowly (slightly limited)	1.00 0.13	Limited: depth to bedrock (limited) slope (moderately limited)	0.81 0.45	Limited: depth to bedrock (limited) slope (moderately limited)	0.68 0.45
40010: Collinsville--	Very limited: bedrock <20 in. (very limited) slope (limited) seepage (moderately limited)	1.00 0.70 0.32	Very limited: shallow to bedrock (very limited) slope (very limited) large stones (slightly limited)	1.00 1.00 0.12	Very limited: shallow to bedrock (very limited) droughty (very limited) slope (very limited)	1.00 1.00 1.00	Very limited: depth to bedrock (very limited) slope (limited)	1.00 0.70	Very limited: bedrock <20 in. (very limited) droughty (very limited) slope (limited)	1.00 1.00 0.70
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 16.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Drainage		Irrigation		Terraces and diversions		Grassed waterways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
44001: Quarles-----	Not limited		Moderately limited: percs slowly (moderately limited)	0.39	Moderately limited: erodes easily (moderately limited) percs slowly (moderately limited)	0.60 0.39	Very limited: wetness (very limited) erodes easily (moderately limited)	1.00 0.60	Very limited: wetness (very limited) erodes easily (moderately limited)	1.00 0.60
46000: Humansville---	Not limited		Limited: flooding (limited) percs slowly (slightly limited)	0.90 0.26	Limited: flooding (limited) erodes easily (moderately limited) percs slowly (slightly limited)	0.90 0.60 0.26	Very limited: wetness (very limited) erodes easily (moderately limited)	1.00 0.60	Very limited: wetness (very limited) erodes easily (moderately limited)	1.00 0.60
66000: Moniteau-----	Not limited		Moderately limited: flooding (moderately limited) percs slowly (slightly limited)	0.60 0.13	Moderately limited: flooding (moderately limited) erodes easily (moderately limited) percs slowly (slightly limited)	0.60 0.60 0.13	Very limited: wetness (very limited) erodes easily (moderately limited)	1.00 0.60	Very limited: wetness (very limited) erodes easily (moderately limited)	1.00 0.60
66001: Dameron-----	Moderately limited: seepage (moderately limited)	0.50	Limited: flooding (limited)	0.90	Limited: flooding (limited)	0.90	Not limited		Not limited	
70000: Bona-----	Moderately limited: seepage (moderately limited) slope (moderately limited)	0.50 0.31	Limited: slope (limited) percs slowly (slightly limited)	0.98 0.13	Limited: slope (limited) percs slowly (slightly limited)	0.98 0.13	Moderately limited: slope (moderately limited)	0.31	Moderately limited: slope (moderately limited)	0.31
70001: Bona-----	Limited: slope (limited)	0.99	Very limited: slope (very limited) percs slowly (slightly limited)	1.00 0.13	Very limited: slope (very limited) percs slowly (slightly limited)	1.00 0.13	Limited: slope (limited)	0.99	Limited: slope (limited)	0.99

Table 16.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Drainage		Irrigation		Terraces and diversions		Grassed waterways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70002: Alsup-----	Limited: depth to bedrock (limited) slope (moderately limited)	0.65 0.31	Limited: slope (limited) percs slowly (slightly limited)	0.98 0.13	Limited: slope (limited) erodes easily (moderately limited) percs slowly (slightly limited)	0.98 0.60 0.13	Limited: depth to bedrock (limited) erodes easily (moderately limited) slope (moderately limited)	0.66 0.60 0.31	Limited: depth to bedrock (limited) erodes easily (moderately limited) slope (moderately limited)	0.65 0.60 0.31
70003: Alsup-----	Limited: slope (limited) depth to bedrock (moderately limited)	0.99 0.40	Very limited: slope (very limited) percs slowly (slightly limited)	1.00 0.13	Very limited: slope (very limited) percs slowly (slightly limited)	1.00 0.13	Limited: slope (limited) depth to bedrock (slightly limited)	0.99 0.25	Limited: slope (limited) depth to bedrock (moderately limited)	0.99 0.40
70004: Alsup-----	Very limited: slope (very limited) depth to bedrock (limited)	1.00 0.70	Very limited: slope (very limited) large surface stones (moderately limited) percs slowly (slightly limited)	1.00 0.60 0.13	Very limited: slope (very limited) large surface stones (moderately limited) percs slowly (slightly limited)	1.00 0.60 0.13	Very limited: slope (very limited) depth to bedrock (limited) large surface stones (moderately limited)	1.00 0.90 0.60	Very limited: slope (very limited) depth to bedrock (limited) large surface stones (moderately limited)	1.00 0.70 0.60
70006: Crelton-----	Moderately limited: seepage (moderately limited)	0.50	Very limited: percs slowly (very limited)	1.00	Very limited: percs slowly (very limited)	1.00	Moderately limited: wetness (moderately limited)	0.36	Limited: rooting depth (limited) wetness (moderately limited)	0.80 0.36
70007: Cliquot-----	Limited: slope (limited) seepage (moderately limited) depth to bedrock (moderately limited)	0.99 0.50 0.42	Very limited: slope (very limited) percs slowly (moderately limited)	1.00 0.39	Very limited: slope (very limited) percs slowly (moderately limited)	1.00 0.39	Limited: slope (limited) large stones (limited) depth to bedrock (slightly limited)	0.99 0.88 0.30	Limited: slope (limited) large stones (limited) depth to bedrock (moderately limited)	0.99 0.88 0.42

Table 16.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Drainage		Irrigation		Terraces and diversions		Grassed waterways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70008: Goss-----	Moderately limited: seepage (moderately limited) slope (moderately limited)	0.50 0.31	Limited: slope (limited) large stones (moderately limited)	0.98 0.51	Limited: slope (limited) droughty (slightly limited)	0.98 0.13	Moderately limited: large stones (moderately limited) slope (moderately limited)	0.54 0.31	Moderately limited: large stones (moderately limited) slope (moderately limited) droughty (slightly limited)	0.54 0.31 0.13
70009: Goss-----	Limited: slope (limited) seepage (moderately limited)	0.99 0.50	Very limited: slope (very limited) large stones (very limited)	1.00 1.00	Very limited: slope (very limited) large stones (moderately limited) droughty (slightly limited)	1.00 0.34 0.19	Very limited: large stones (very limited) slope (limited)	1.00 0.99	Very limited: large stones (very limited) slope (limited) droughty (slightly limited)	1.00 0.99 0.19
70010: Goss-----	Very limited: slope (very limited) seepage (very limited)	1.00 1.00	Very limited: slope (very limited) large stones (limited)	1.00 0.99	Very limited: slope (very limited) droughty (limited) large stones (moderately limited)	1.00 0.72 0.38	Very limited: slope (very limited) large stones (very limited)	1.00 1.00	Very limited: slope (very limited) large stones (very limited) droughty (limited)	1.00 1.00 0.72
70011: Goss-----	Very limited: slope (very limited) seepage (very limited)	1.00 1.00	Very limited: slope (very limited) large stones (slightly limited)	1.00 0.30	Very limited: slope (very limited) droughty (moderately limited)	1.00 0.47	Very limited: slope (very limited) large stones (slightly limited)	1.00 0.12	Very limited: slope (very limited) droughty (moderately limited) large stones (slightly limited)	1.00 0.47 0.12
Moko-----	Very limited: bedrock <20 in. (very limited) slope (limited)	1.00 0.70	Very limited: shallow to bedrock (very limited) slope (very limited) large stones (limited)	1.00 1.00 0.75	Very limited: shallow to bedrock (very limited) droughty (very limited) slope (very limited)	1.00 1.00 1.00	Very limited: depth to bedrock (very limited) large stones (very limited) slope (limited)	1.00 1.00 0.70	Very limited: large stones (very limited) bedrock <20 in. (very limited) droughty (very limited)	1.00 1.00 1.00

Table 16.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Drainage		Irrigation		Terraces and diversions		Grassed waterways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70012: Hoberg-----	Moderately limited: seepage (moderately limited) slope (slightly limited)	0.50 0.10	Very limited: large stones (very limited) slope (moderately limited) percs slowly (moderately limited)	1.00 0.40 0.39	Moderately limited: slope (moderately limited) percs slowly (moderately limited)	0.40 0.39	Moderately limited: large stones (moderately limited) wetness (moderately limited) slope (slightly limited)	0.45 0.44 0.10	Limited: rooting depth (limited) large stones (moderately limited) wetness (moderately limited)	0.80 0.45 0.44
70014: Moko-----	Very limited: bedrock <20 in. (very limited) slope (very limited)	1.00 1.00	Very limited: slope (very limited) shallow to bedrock (very limited) large stones (very limited)	1.00 1.00 1.00	Very limited: shallow to bedrock (very limited) droughty (very limited) slope (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) depth to bedrock (very limited) large stones (very limited)	1.00 1.00 1.00	Very limited: large stones (very limited) bedrock <20 in. (very limited) slope (very limited)	1.00 1.00 1.00
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	
70040: Cliquot-----	Limited: depth to bedrock (limited) slope (moderately limited)	0.70 0.31	Limited: slope (limited) percs slowly (moderately limited)	0.98 0.39	Limited: slope (limited) percs slowly (moderately limited)	0.98 0.39	Limited: depth to bedrock (limited) slope (moderately limited) large stones (slightly limited)	0.90 0.31 0.01	Limited: depth to bedrock (limited) slope (moderately limited) large stones (slightly limited)	0.70 0.31 0.01
Bolivar-----	Limited: depth to bedrock (limited) seepage (moderately limited) slope (moderately limited)	0.91 0.50 0.31	Very limited: large stones (very limited) slope (limited) depth to bedrock (moderately limited)	1.00 0.98 0.53	Limited: slope (limited) depth to bedrock (moderately limited) droughty (moderately limited)	0.98 0.53 0.31	Very limited: depth to bedrock (very limited) large stones (very limited) slope (moderately limited)	1.00 1.00 0.31	Very limited: large stones (very limited) depth to bedrock (limited) droughty (moderately limited)	1.00 0.91 0.31
70041: Goss-----	Very limited: seepage (very limited) slope (limited)	1.00 0.99	Very limited: slope (very limited) large stones (very limited)	1.00 1.00	Very limited: slope (very limited) large stones (slightly limited) droughty (slightly limited)	1.00 0.19 0.10	Very limited: large stones (very limited) slope (limited)	1.00 0.99	Very limited: large stones (very limited) slope (limited) droughty (slightly limited)	1.00 0.99 0.10

Table 16.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Drainage		Irrigation		Terraces and diversions		Grassed waterways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70042: Goss-----	Very limited: slope (very limited) seepage (moderately limited)	1.00 0.50	Very limited: slope (very limited)	1.00	Very limited: slope (very limited) droughty (slightly limited)	1.00 0.17	Very limited: slope (very limited)	1.00	Very limited: slope (very limited) droughty (slightly limited)	1.00 0.17
70043: Sonsac-----	Limited: depth to bedrock (limited) slope (limited) seepage (moderately limited)	0.84 0.70 0.50	Very limited: slope (very limited) large stones (very limited) depth to bedrock (slightly limited)	1.00 1.00 0.27	Very limited: slope (very limited) large stones (limited) droughty (moderately limited)	1.00 0.96 0.37	Very limited: depth to bedrock (very limited) large stones (very limited) slope (limited)	1.00 1.00 0.70	Very limited: large stones (very limited) depth to bedrock (limited) slope (limited)	1.00 0.84 0.70
Moko-----	Very limited: bedrock <20 in. (very limited) slope (limited)	1.00 0.70	Very limited: shallow to bedrock (very limited) slope (very limited)	1.00 1.00	Very limited: shallow to bedrock (very limited) droughty (very limited) slope (very limited)	1.00 1.00 1.00	Very limited: depth to bedrock (very limited) slope (limited)	1.00 0.70	Very limited: bedrock <20 in. (very limited) droughty (very limited) slope (limited)	1.00 1.00 0.70
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	
70044: Sonsac-----	Very limited: slope (very limited) seepage (very limited) depth to bedrock (limited)	1.00 1.00 0.75	Very limited: slope (very limited) large stones (limited) depth to bedrock (slightly limited)	1.00 0.75 0.09	Very limited: slope (very limited) depth to bedrock (slightly limited) droughty (slightly limited)	1.00 0.09 0.07	Very limited: slope (very limited) depth to bedrock (very limited) large stones (limited)	1.00 1.00 0.95	Very limited: slope (very limited) large stones (limited) depth to bedrock (limited)	1.00 0.95 0.75
Moko-----	Very limited: bedrock <20 in. (very limited) slope (very limited)	1.00 1.00	Very limited: slope (very limited) shallow to bedrock (very limited)	1.00 1.00	Very limited: shallow to bedrock (very limited) slope (very limited) droughty (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) depth to bedrock (very limited)	1.00 1.00	Very limited: bedrock <20 in. (very limited) slope (very limited) droughty (very limited)	1.00 1.00 1.00

Table 16.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Drainage		Irrigation		Terraces and diversions		Grassed waterways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70047: Wanda-----	Moderately limited: seepage (moderately limited) slope (slightly limited)	0.50 0.10	Moderately limited: slope (moderately limited)	0.40	Moderately limited: erodes easily (moderately limited) slope (moderately limited)	0.60 0.40	Moderately limited: erodes easily (moderately limited) slope (slightly limited)	0.60 0.10	Moderately limited: erodes easily (moderately limited) slope (slightly limited)	0.60 0.10
70048: Alsup-----	Limited: slope (limited) depth to bedrock (moderately limited) seepage (moderately limited)	0.99 0.55 0.50	Very limited: slope (very limited) large surface stones (limited) percs slowly (slightly limited)	1.00 0.70 0.13	Very limited: slope (very limited) large surface stones (limited) erodes easily (moderately limited)	1.00 0.70 0.60	Limited: slope (limited) large surface stones (limited) erodes easily (moderately limited)	0.99 0.70 0.60	Limited: slope (limited) large surface stones (limited) erodes easily (moderately limited)	0.99 0.70 0.60
70052: Arnica-----	Moderately limited: seepage (moderately limited) slope (slightly limited)	0.50 0.10	Moderately limited: slope (moderately limited)	0.40	Moderately limited: slope (moderately limited)	0.40	Slightly limited: wetness (slightly limited) slope (slightly limited)	0.13 0.10	Slightly limited: wetness (slightly limited) slope (slightly limited)	0.13 0.10
70053: Courtois-----	Moderately limited: seepage (moderately limited) slope (slightly limited)	0.50 0.10	Moderately limited: slope (moderately limited)	0.40	Moderately limited: slope (moderately limited)	0.40	Limited: large stones (limited) slope (slightly limited)	0.96 0.10	Limited: large stones (limited) slope (slightly limited)	0.96 0.10
70054: Cliquot-----	Limited: slope (limited) depth to bedrock (moderately limited)	0.99 0.42	Very limited: slope (very limited) large surface stones (limited) percs slowly (moderately limited)	1.00 0.70 0.39	Very limited: slope (very limited) large surface stones (limited) percs slowly (moderately limited)	1.00 0.70 0.39	Limited: slope (limited) large surface stones (limited) depth to bedrock (slightly limited)	0.99 0.70 0.30	Limited: slope (limited) large surface stones (limited) depth to bedrock (moderately limited)	0.99 0.70 0.42
71254: Cotter-----	Moderately limited: seepage (moderately limited)	0.50	Not limited		Moderately limited: erodes easily (moderately limited)	0.60	Moderately limited: erodes easily (moderately limited)	0.60	Moderately limited: erodes easily (moderately limited)	0.60

Table 16.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Drainage		Irrigation		Terraces and diversions		Grassed waterways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
71750: Cleora-----	Very limited: seepage (very limited)	1.00	Limited: flooding (limited)	0.90	Limited: flooding (limited)	0.90	Not limited		Not limited	
73000: Pomme-----	Moderately limited: seepage (moderately limited) slope (moderately limited)	0.50 0.31	Limited: slope (limited)	0.98	Limited: slope (limited)	0.98	Moderately limited: slope (moderately limited)	0.31	Moderately limited: slope (moderately limited)	0.31
73003: Ocie-----	Very limited: slope (very limited) depth to bedrock (limited)	1.00 0.65	Very limited: slope (very limited) percs slowly (moderately limited)	1.00 0.39	Very limited: slope (very limited) percs slowly (moderately limited)	1.00 0.39	Very limited: slope (very limited) depth to bedrock (limited) wetness (slightly limited)	1.00 0.66 0.28	Very limited: slope (very limited) depth to bedrock (limited) wetness (slightly limited)	1.00 0.65 0.28
Gatewood-----	Very limited: slope (very limited) depth to bedrock (limited)	1.00 0.89	Very limited: slope (very limited) depth to bedrock (moderately limited) percs slowly (moderately limited)	1.00 0.46 0.39	Very limited: slope (very limited) depth to bedrock (moderately limited) percs slowly (moderately limited)	1.00 0.46 0.39	Very limited: slope (very limited) depth to bedrock (very limited) wetness (moderately limited)	1.00 1.00 0.50	Very limited: slope (very limited) depth to bedrock (limited) wetness (moderately limited)	1.00 0.89 0.50
73005: Ocie-----	Limited: slope (limited) depth to bedrock (moderately limited)	0.70 0.50	Very limited: slope (very limited) large stones (very limited) percs slowly (moderately limited)	1.00 1.00 0.39	Very limited: slope (very limited) percs slowly (moderately limited) large stones (slightly limited)	1.00 0.39 0.01	Very limited: large stones (very limited) slope (limited) depth to bedrock (moderately limited)	1.00 0.70 0.39	Very limited: large stones (very limited) slope (limited) depth to bedrock (moderately limited)	1.00 0.70 0.50
73007: Plato-----	Not limited		Very limited: percs slowly (very limited)	1.00	Very limited: percs slowly (very limited) erodes easily (moderately limited)	1.00 0.60	Limited: wetness (limited) erodes easily (moderately limited)	0.68 0.60	Limited: rooting depth (limited) wetness (limited) erodes easily (moderately limited)	0.80 0.68 0.60

Table 16.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Drainage		Irrigation		Terraces and diversions		Grassed waterways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
73008: Viraton-----	Moderately limited: seepage (moderately limited) slope (slightly limited)	0.50 0.10	Very limited: percs slowly (very limited) slope (moderately limited)	1.00 0.40	Very limited: percs slowly (very limited) erodes easily (moderately limited) slope (moderately limited)	1.00 0.60 0.40	Moderately limited: erodes easily (moderately limited) wetness (moderately limited) slope (slightly limited)	0.60 0.55 0.10	Limited: rooting depth (limited) erodes easily (moderately limited) wetness (moderately limited)	0.80 0.60 0.55
73059: Pomme-----	Moderately limited: seepage (moderately limited)	0.50	Not limited		Moderately limited: erodes easily (moderately limited)	0.60	Moderately limited: erodes easily (moderately limited)	0.60	Moderately limited: erodes easily (moderately limited)	0.60
73075: Hobson-----	Not limited		Moderately limited: percs slowly (moderately limited)	0.39	Moderately limited: erodes easily (moderately limited) percs slowly (moderately limited)	0.60 0.39	Moderately limited: erodes easily (moderately limited) wetness (moderately limited)	0.60 0.36	Limited: rooting depth (limited) erodes easily (moderately limited) wetness (moderately limited)	0.80 0.60 0.36
74625: Hartville-----	Moderately limited: slope (moderately limited)	0.31	Limited: slope (limited) percs slowly (moderately limited)	0.98 0.39	Limited: slope (limited) erodes easily (moderately limited) percs slowly (moderately limited)	0.98 0.60 0.39	Moderately limited: erodes easily (moderately limited) wetness (moderately limited) slope (moderately limited)	0.60 0.55 0.31	Moderately limited: erodes easily (moderately limited) wetness (moderately limited) slope (moderately limited)	0.60 0.55 0.31
74641: Secesh-----	Moderately limited: seepage (moderately limited)	0.50	Moderately limited: flooding (moderately limited)	0.60	Moderately limited: flooding (moderately limited)	0.60	Not limited		Not limited	
75375: Horsecreek----	Moderately limited: seepage (moderately limited)	0.50	Moderately limited: flooding (moderately limited)	0.60	Moderately limited: flooding (moderately limited) erodes easily (moderately limited)	0.60 0.60	Moderately limited: erodes easily (moderately limited)	0.60	Moderately limited: erodes easily (moderately limited)	0.60

Table 16.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Drainage		Irrigation		Terraces and diversions		Grassed waterways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
75377: Racket-----	Very limited: seepage (very limited)	1.00	Limited: flooding (limited)	0.90	Limited: flooding (limited)	0.90	Not limited		Not limited	
75378: Sturkie-----	Moderately limited: seepage (moderately limited)	0.50	Limited: flooding (limited)	0.90	Limited: flooding (limited) erodes easily (moderately limited)	0.90 0.60	Moderately limited: erodes easily (moderately limited)	0.60	Moderately limited: erodes easily (moderately limited)	0.60
99000: Pits, quarries	Not rated		Not rated		Not rated		Not rated		Not rated	
99001: Water-----	Not rated		Not rated		Not rated		Not rated		Not rated	
99004: Kanima-----	Very limited: slope (very limited) seepage (moderately limited)	1.00 0.50	Very limited: slope (very limited) large stones (slightly limited)	1.00 0.30	Very limited: slope (very limited) droughty (slightly limited)	1.00 0.28	Very limited: slope (very limited) large stones (slightly limited)	1.00 0.15	Very limited: slope (very limited) droughty (slightly limited) large stones (slightly limited)	1.00 0.28 0.15
99007: Dam-----	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 17.--Waste Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Land application of manure and food-processing waste		Land application of municipal sewage sludge		Disposal of wastewater by irrigation		Treatment of wastewater by slow rate process		Treatment of wastewater by rapid infiltration process	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
40000: Barden-----	Limited: percs slowly (limited) wetness (slightly limited)	0.99 0.28	Limited: percs slowly (limited) wetness (slightly limited)	0.99 0.28	Limited: percs slowly (limited) wetness (slightly limited)	0.99 0.28	Limited: percs slowly (limited) wetness (slightly limited)	0.99 0.28	Very limited: percs slowly (very limited) wetness (very limited) too acid (slightly limited)	1.00 1.00 0.01
40001: Bolivar-----	Slightly limited: depth to bedrock (slightly limited)	0.06	Slightly limited: depth to bedrock (slightly limited)	0.06	Moderately limited: slope (moderately limited) depth to bedrock (slightly limited)	0.31 0.06	Very limited: depth to bedrock (very limited) slope (moderately limited)	1.00 0.31	Very limited: percs slowly (very limited) depth to bedrock (very limited) slope (limited)	1.00 1.00 0.91
40004: Barden-----	Slightly limited: wetness (slightly limited)	0.28	Slightly limited: wetness (slightly limited)	0.28	Slightly limited: wetness (slightly limited) slope (slightly limited)	0.28 0.10	Slightly limited: wetness (slightly limited) slope (slightly limited)	0.28 0.10	Very limited: percs slowly (very limited) wetness (very limited) slope (moderately limited)	1.00 1.00 0.31
40005: Sylvania-----	Limited: large surface stones (limited) slope (moderately limited) too acid (moderately limited)	0.70 0.60 0.48	Limited: large surface stones (limited) slope (moderately limited) too acid (moderately limited)	0.70 0.60 0.48	Limited: slope (limited) large surface stones (limited) too acid (moderately limited)	0.80 0.70 0.48	Limited: slope (limited) large surface stones (limited) depth to bedrock (limited)	0.80 0.70 0.61	Very limited: percs slowly (very limited) depth to bedrock (very limited) wetness (very limited)	1.00 1.00 1.00

Table 17.--Waste Management--Continued

Map symbol and soil name	Land application of manure and food-processing waste		Land application of municipal sewage sludge		Disposal of wastewater by irrigation		Treatment of wastewater by slow rate process		Treatment of wastewater by rapid infiltration process	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
40006: Barco-----	Slightly limited: depth to bedrock (slightly limited) too acid (slightly limited)	0.27 0.24	Slightly limited: depth to bedrock (slightly limited) too acid (slightly limited)	0.27 0.24	Slightly limited: depth to bedrock (slightly limited) too acid (slightly limited) slope (slightly limited)	0.27 0.24 0.10	Very limited: depth to bedrock (very limited) too acid (slightly limited) slope (slightly limited)	1.00 0.24 0.10	Very limited: percs slowly (very limited) depth to bedrock (very limited) slope (moderately limited)	1.00 1.00 0.31
Sylvania-----	Limited: percs slowly (limited) too acid (slightly limited)	0.61 0.24	Limited: percs slowly (limited) too acid (slightly limited)	0.61 0.24	Limited: percs slowly (limited) too acid (slightly limited) slope (slightly limited)	0.61 0.24 0.10	Limited: percs slowly (limited) depth to bedrock (moderately limited) too acid (slightly limited)	0.61 0.48 0.24	Very limited: percs slowly (very limited) depth to bedrock (very limited) wetness (very limited)	1.00 1.00 1.00
40007: Eldorado-----	Limited: large surface stones (limited) slope (moderately limited)	0.70 0.45	Limited: large surface stones (limited) slope (moderately limited)	0.70 0.45	Limited: slope (limited) large surface stones (limited)	0.70 0.70	Limited: slope (limited) large surface stones (limited)	0.70 0.70	Very limited: percs slowly (very limited) slope (very limited) too cobbly (limited)	1.00 1.00 0.78
40008: Parsons-----	Very limited: percs slowly (very limited) wetness (limited)	1.00 0.99	Very limited: percs slowly (very limited) wetness (limited)	1.00 0.99	Very limited: percs slowly (very limited) wetness (limited)	1.00 0.99	Very limited: percs slowly (very limited) wetness (limited)	1.00 0.99	Very limited: percs slowly (very limited) wetness (very limited)	1.00 1.00
40009: Sylvania-----	Limited: percs slowly (limited) slope (slightly limited)	0.61 0.15	Limited: percs slowly (limited) slope (slightly limited)	0.61 0.15	Limited: percs slowly (limited) slope (moderately limited)	0.61 0.45	Limited: depth to bedrock (limited) percs slowly (limited) slope (moderately limited)	0.81 0.61 0.45	Very limited: percs slowly (very limited) depth to bedrock (very limited) wetness (very limited)	1.00 1.00 1.00

Table 17.--Waste Management--Continued

Map symbol and soil name	Land application of manure and food-processing waste		Land application of municipal sewage sludge		Disposal of wastewater by irrigation		Treatment of wastewater by slow rate process		Treatment of wastewater by rapid infiltration process	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
40010: Collinsville--	Very limited: shallow to bedrock (very limited) droughty (very limited) slope (moderately limited)	1.00 1.00 0.45	Very limited: shallow to bedrock (very limited) droughty (very limited) slope (moderately limited)	1.00 1.00 0.45	Very limited: shallow to bedrock (very limited) droughty (very limited) slope (limited)	1.00 1.00 0.70	Very limited: depth to bedrock (very limited) slope (limited)	1.00 0.70	Very limited: depth to bedrock (very limited) slope (very limited) percs slowly (moderately limited)	1.00 1.00 0.32
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	
44001: Quarles-----	Very limited: wetness (very limited) percs slowly (limited) flooding (slightly limited)	1.00 0.61 0.30	Very limited: wetness (very limited) percs slowly (limited) flooding (slightly limited)	1.00 0.61 0.30	Very limited: wetness (very limited) percs slowly (limited) flooding (slightly limited)	1.00 0.61 0.30	Very limited: wetness (very limited) percs slowly (limited) flooding (slightly limited)	1.00 0.61 0.30	Very limited: percs slowly (very limited) wetness (very limited)	1.00 1.00
46000: Humansville---	Very limited: wetness (very limited) flooding (very limited) percs slowly (limited)	1.00 1.00 0.61	Very limited: wetness (very limited) flooding (very limited) percs slowly (limited)	1.00 1.00 0.61	Very limited: wetness (very limited) flooding (very limited) percs slowly (limited)	1.00 1.00 0.61	Very limited: flooding (very limited) wetness (very limited) percs slowly (limited)	1.00 1.00 0.61	Very limited: percs slowly (very limited) wetness (very limited) flooding (very limited)	1.00 1.00 1.00
66000: Moniteau-----	Very limited: wetness (very limited) flooding (limited)	1.00 0.90	Very limited: wetness (very limited) flooding (limited)	1.00 0.90	Very limited: wetness (very limited) flooding (limited)	1.00 0.90	Very limited: wetness (very limited) flooding (limited)	1.00 0.90	Very limited: percs slowly (very limited) wetness (very limited) flooding (moderately limited)	1.00 1.00 0.60
66001: Dameron-----	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: percs slowly (very limited) flooding (very limited)	1.00 1.00

Table 17.--Waste Management--Continued

Map symbol and soil name	Land application of manure and food-processing waste		Land application of municipal sewage sludge		Disposal of wastewater by irrigation		Treatment of wastewater by slow rate process		Treatment of wastewater by rapid infiltration process	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70000:										
Bona-----	Limited: percs slowly (limited)	0.61	Limited: percs slowly (limited)	0.61	Limited: percs slowly (limited) slope (moderately limited)	0.61 0.31	Limited: percs slowly (limited) slope (moderately limited)	0.61 0.31	Very limited: percs slowly (very limited) slope (limited) too acid (slightly limited)	1.00 0.91 0.01
70001:										
Bona-----	Limited: slope (limited) percs slowly (limited)	0.76 0.61	Limited: slope (limited) percs slowly (limited)	0.76 0.61	Limited: slope (limited) percs slowly (limited)	0.99 0.61	Limited: slope (limited) percs slowly (limited)	0.99 0.61	Very limited: percs slowly (very limited) slope (very limited)	1.00 1.00
70002:										
Alsup-----	Limited: percs slowly (limited) too acid (slightly limited)	0.61 0.12	Limited: percs slowly (limited) too acid (slightly limited)	0.61 0.12	Limited: percs slowly (limited) slope (moderately limited) too acid (slightly limited)	0.61 0.31 0.12	Limited: depth to bedrock (limited) percs slowly (limited) slope (moderately limited)	0.66 0.61 0.31	Very limited: percs slowly (very limited) depth to bedrock (very limited) wetness (very limited)	1.00 1.00 1.00
70003:										
Alsup-----	Limited: slope (limited) percs slowly (limited) too acid (slightly limited)	0.76 0.61 0.24	Limited: slope (limited) percs slowly (limited) too acid (slightly limited)	0.76 0.61 0.24	Limited: slope (limited) percs slowly (limited) too acid (slightly limited)	0.99 0.61 0.24	Limited: slope (limited) percs slowly (limited) depth to bedrock (slightly limited)	0.99 0.61 0.25	Very limited: percs slowly (very limited) slope (very limited) depth to bedrock (very limited)	1.00 1.00 1.00
70004:										
Alsup-----	Very limited: slope (very limited) percs slowly (limited) large surface stones (moderately limited)	1.00 0.61 0.60	Very limited: slope (very limited) percs slowly (limited) large surface stones (moderately limited)	1.00 0.61 0.60	Very limited: slope (very limited) percs slowly (limited) large surface stones (moderately limited)	1.00 0.61 0.60	Very limited: slope (very limited) depth to bedrock (limited) percs slowly (limited)	1.00 0.90 0.61	Very limited: percs slowly (very limited) slope (very limited) depth to bedrock (very limited)	1.00 1.00 1.00

Table 17.--Waste Management--Continued

Map symbol and soil name	Land application of manure and food-processing waste		Land application of municipal sewage sludge		Disposal of wastewater by irrigation		Treatment of wastewater by slow rate process		Treatment of wastewater by rapid infiltration process	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70006: Credlon-----	Moderately limited: wetness (moderately limited)	0.36	Moderately limited: wetness (moderately limited)	0.36	Moderately limited: wetness (moderately limited)	0.36	Moderately limited: wetness (moderately limited)	0.36	Very limited: percs slowly (very limited) wetness (very limited)	1.00 1.00
70007: Cliquot-----	Limited: percs slowly (limited) slope (limited)	0.99 0.76	Limited: percs slowly (limited) slope (limited)	0.99 0.76	Limited: slope (limited) percs slowly (limited)	0.99 0.99	Limited: slope (limited) percs slowly (limited) depth to bedrock (slightly limited)	0.99 0.99 0.30	Very limited: percs slowly (very limited) slope (very limited) depth to bedrock (very limited)	1.00 1.00 1.00
70008: Goss-----	Slightly limited: droughty (slightly limited)	0.13	Slightly limited: droughty (slightly limited)	0.13	Moderately limited: slope (moderately limited) droughty (slightly limited)	0.31 0.13	Moderately limited: slope (moderately limited)	0.31	Very limited: percs slowly (very limited) slope (limited)	1.00 0.91
70009: Goss-----	Limited: slope (limited) droughty (slightly limited)	0.76 0.19	Limited: slope (limited) droughty (slightly limited)	0.76 0.19	Limited: slope (limited) droughty (slightly limited)	0.99 0.19	Limited: slope (limited)	0.99	Very limited: percs slowly (very limited) slope (very limited) too cobbly (limited)	1.00 1.00 0.94
70010: Goss-----	Very limited: slope (very limited) large stones (limited) droughty (limited)	1.00 0.73 0.72	Very limited: slope (very limited) large stones (limited) droughty (limited)	1.00 0.73 0.72	Very limited: slope (very limited) large stones (limited) droughty (limited)	1.00 0.73 0.72	Very limited: slope (very limited) large stones (limited)	1.00 0.73	Very limited: slope (very limited) too cobbly (limited) percs slowly (moderately limited)	1.00 0.80 0.32

Table 17.--Waste Management--Continued

Map symbol and soil name	Land application of manure and food-processing waste		Land application of municipal sewage sludge		Disposal of wastewater by irrigation		Treatment of wastewater by slow rate process		Treatment of wastewater by rapid infiltration process	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70011:										
Goss-----	Very limited: slope (very limited) droughty (moderately limited) too acid (slightly limited)	1.00 0.47 0.18	Very limited: slope (very limited) droughty (moderately limited) too acid (slightly limited)	1.00 0.47 0.18	Very limited: slope (very limited) droughty (moderately limited) too acid (slightly limited)	1.00 0.47 0.18	Very limited: slope (very limited) too acid (slightly limited)	1.00 0.18	Very limited: percs slowly (very limited) slope (very limited)	1.00 1.00
Moko-----	Very limited: shallow to bedrock (very limited) droughty (very limited) slope (moderately limited)	1.00 1.00 0.45	Very limited: droughty (very limited) shallow to bedrock (very limited) slope (moderately limited)	1.00 1.00 0.45	Very limited: droughty (very limited) shallow to bedrock (very limited) slope (limited)	1.00 1.00 0.70	Very limited: depth to bedrock (very limited) slope (limited) large surface stones (moderately limited)	1.00 0.70 0.37	Very limited: percs slowly (very limited) depth to bedrock (very limited) slope (very limited)	1.00 1.00 1.00
70012:										
Hoberg-----	Moderately limited: wetness (moderately limited)	0.44	Moderately limited: wetness (moderately limited)	0.44	Moderately limited: wetness (moderately limited) slope (slightly limited)	0.44 0.10	Moderately limited: wetness (moderately limited) slope (slightly limited)	0.44 0.10	Very limited: percs slowly (very limited) wetness (very limited) slope (moderately limited)	1.00 1.00 0.31
70014:										
Moko-----	Very limited: shallow to bedrock (very limited) droughty (very limited) slope (very limited)	1.00 1.00 1.00	Very limited: droughty (very limited) shallow to bedrock (very limited) slope (very limited)	1.00 1.00 1.00	Very limited: droughty (very limited) slope (very limited) shallow to bedrock (very limited)	1.00 1.00 1.00	Very limited: depth to bedrock (very limited) slope (very limited) large surface stones (moderately limited)	1.00 1.00 0.37	Very limited: percs slowly (very limited) slope (very limited) depth to bedrock (very limited)	1.00 1.00 1.00
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	
70040:										
Cliquot-----	Limited: percs slowly (limited) too acid (slightly limited)	0.99 0.12	Limited: percs slowly (limited) too acid (slightly limited)	0.99 0.12	Limited: percs slowly (limited) slope (moderately limited) too acid (slightly limited)	0.99 0.31 0.12	Limited: percs slowly (limited) depth to bedrock (limited) slope (moderately limited)	0.99 0.90 0.31	Very limited: percs slowly (very limited) depth to bedrock (very limited) wetness (limited)	1.00 1.00 0.99

Table 17.--Waste Management--Continued

Map symbol and soil name	Land application of manure and food-processing waste		Land application of municipal sewage sludge		Disposal of wastewater by irrigation		Treatment of wastewater by slow rate process		Treatment of wastewater by rapid infiltration process	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70040: Bolivar-----	Moderately limited: depth to bedrock (moderately limited) droughty (moderately limited) too acid (slightly limited)	0.53 0.31 0.18	Moderately limited: depth to bedrock (moderately limited) droughty (moderately limited) too acid (slightly limited)	0.53 0.31 0.18	Moderately limited: depth to bedrock (moderately limited) droughty (moderately limited) slope (moderately limited)	0.53 0.31 0.31	Very limited: depth to bedrock (very limited) slope (moderately limited) too acid (slightly limited)	1.00 0.31 0.18	Very limited: percs slowly (very limited) depth to bedrock (very limited) slope (limited)	1.00 1.00 0.91
70041: Goss-----	Limited: slope (limited) large stones (moderately limited) droughty (slightly limited)	0.76 0.45 0.10	Limited: slope (limited) large stones (moderately limited) droughty (slightly limited)	0.76 0.45 0.10	Limited: slope (limited) large stones (moderately limited) droughty (slightly limited)	0.99 0.45 0.10	Limited: slope (limited) large stones (moderately limited)	0.99 0.45	Very limited: percs slowly (very limited) slope (very limited) too cobbly (limited)	1.00 1.00 0.91
70042: Goss-----	Very limited: slope (very limited) too acid (moderately limited) droughty (slightly limited)	1.00 0.42 0.17	Very limited: slope (very limited) too acid (moderately limited) droughty (slightly limited)	1.00 0.42 0.17	Very limited: slope (very limited) too acid (moderately limited) droughty (slightly limited)	1.00 0.42 0.17	Very limited: slope (very limited) too acid (moderately limited)	1.00 0.42	Very limited: percs slowly (very limited) slope (very limited) too acid (slightly limited)	1.00 1.00 0.03
70043: Sonsac-----	Very limited: large stones >35% (very limited) slope (moderately limited) droughty (moderately limited)	1.00 0.45 0.37	Very limited: large stones >35% (very limited) slope (moderately limited) droughty (moderately limited)	1.00 0.45 0.37	Very limited: large stones >35% (very limited) slope (limited) droughty (moderately limited)	1.00 0.70 0.37	Very limited: depth to bedrock (very limited) large stones >35% (very limited) slope (limited)	1.00 1.00 0.70	Very limited: percs slowly (very limited) depth to bedrock (very limited) slope (very limited)	1.00 1.00 1.00
Moko-----	Very limited: shallow to bedrock (very limited) droughty (very limited) slope (moderately limited)	1.00 1.00 0.45	Very limited: droughty (very limited) shallow to bedrock (very limited) slope (moderately limited)	1.00 1.00 0.45	Very limited: droughty (very limited) shallow to bedrock (very limited) slope (limited)	1.00 1.00 0.70	Very limited: depth to bedrock (very limited) slope (limited)	1.00 0.70	Very limited: percs slowly (very limited) depth to bedrock (very limited) slope (very limited)	1.00 1.00 1.00
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 17.--Waste Management--Continued

Map symbol and soil name	Land application of manure and food-processing waste		Land application of municipal sewage sludge		Disposal of wastewater by irrigation		Treatment of wastewater by slow rate process		Treatment of wastewater by rapid infiltration process	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70044:										
Sonsac-----	Very limited: slope (very limited) depth to bedrock (slightly limited) droughty (slightly limited)	1.00 0.09 0.07	Very limited: slope (very limited) depth to bedrock (slightly limited) droughty (slightly limited)	1.00 0.09 0.07	Very limited: slope (very limited) depth to bedrock (slightly limited) droughty (slightly limited)	1.00 0.09 0.07	Very limited: depth to bedrock (very limited) slope (very limited)	1.00 1.00	Very limited: slope (very limited) depth to bedrock (very limited) percs slowly (moderately limited)	1.00 1.00 0.32
Moko-----	Very limited: shallow to bedrock (very limited) droughty (very limited) slope (very limited)	1.00 1.00 1.00	Very limited: shallow to bedrock (very limited) droughty (very limited) slope (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) shallow to bedrock (very limited) droughty (very limited)	1.00 1.00 1.00	Very limited: depth to bedrock (very limited) slope (very limited)	1.00 1.00	Very limited: percs slowly (very limited) slope (very limited) depth to bedrock (very limited)	1.00 1.00 1.00
70047:										
Wanda-----	Not limited		Not limited		Slightly limited: slope (slightly limited)	0.10	Slightly limited: slope (slightly limited)	0.10	Very limited: percs slowly (very limited) slope (moderately limited)	1.00 0.31
70048:										
Alsup-----	Limited: slope (limited) large surface stones (limited) too acid (slightly limited)	0.76 0.70 0.24	Limited: slope (limited) large surface stones (limited) too acid (slightly limited)	0.76 0.70 0.24	Limited: slope (limited) large surface stones (limited) too acid (slightly limited)	0.99 0.70 0.24	Limited: slope (limited) large surface stones (limited) depth to bedrock (moderately limited)	0.99 0.70 0.45	Very limited: percs slowly (very limited) slope (very limited) depth to bedrock (very limited)	1.00 1.00 1.00
70052:										
Arnica-----	Slightly limited: too acid (slightly limited) wetness (slightly limited)	0.18 0.13	Slightly limited: too acid (slightly limited) wetness (slightly limited)	0.18 0.13	Slightly limited: too acid (slightly limited) wetness (slightly limited) slope (slightly limited)	0.18 0.13 0.10	Slightly limited: too acid (slightly limited) wetness (slightly limited) slope (slightly limited)	0.18 0.13 0.10	Very limited: percs slowly (very limited) wetness (very limited) slope (moderately limited)	1.00 1.00 0.31

Table 17.--Waste Management--Continued

Map symbol and soil name	Land application of manure and food-processing waste		Land application of municipal sewage sludge		Disposal of wastewater by irrigation		Treatment of wastewater by slow rate process		Treatment of wastewater by rapid infiltration process	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70053: Courtois-----	Not limited		Not limited		Slightly limited: slope (slightly limited)	0.10	Slightly limited: slope (slightly limited)	0.10	Very limited: percs slowly (very limited) too stony (limited) slope (moderately limited)	1.00 0.91 0.31
70054: Cliquot-----	Limited: percs slowly (limited) slope (limited) large surface stones (limited)	0.99 0.76 0.70	Limited: percs slowly (limited) slope (limited) large surface stones (limited)	0.99 0.76 0.70	Limited: slope (limited) percs slowly (limited) large surface stones (limited)	0.99 0.99 0.70	Limited: slope (limited) percs slowly (limited) large surface stones (limited)	0.99 0.99 0.70	Very limited: percs slowly (very limited) depth to bedrock (very limited) slope (very limited)	1.00 1.00 1.00
71254: Cotter-----	Slightly limited: flooding (slightly limited)	0.30	Slightly limited: flooding (slightly limited)	0.30	Slightly limited: flooding (slightly limited)	0.30	Slightly limited: flooding (slightly limited)	0.30	Very limited: percs slowly (very limited)	1.00
71750: Cleora-----	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited) percs slowly (moderately limited)	1.00 0.32
73000: Pomme-----	Not limited		Not limited		Moderately limited: slope (moderately limited)	0.31	Moderately limited: slope (moderately limited)	0.31	Very limited: percs slowly (very limited) slope (limited)	1.00 0.91
73003: Ocie-----	Very limited: slope (very limited) wetness (slightly limited) too acid (slightly limited)	1.00 0.28 0.24	Very limited: slope (very limited) wetness (slightly limited) too acid (slightly limited)	1.00 0.28 0.24	Very limited: slope (very limited) wetness (slightly limited) too acid (slightly limited)	1.00 0.28 0.24	Very limited: slope (very limited) depth to bedrock (limited) wetness (slightly limited)	1.00 0.66 0.28	Very limited: percs slowly (very limited) slope (very limited) depth to bedrock (very limited)	1.00 1.00 1.00

Table 17.--Waste Management--Continued

Map symbol and soil name	Land application of manure and food-processing waste		Land application of municipal sewage sludge		Disposal of wastewater by irrigation		Treatment of wastewater by slow rate process		Treatment of wastewater by rapid infiltration process	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
73003: Gatewood-----	Very limited: slope (very limited) wetness (moderately limited) depth to bedrock (moderately limited)	1.00 0.50 0.46	Very limited: slope (very limited) wetness (moderately limited) depth to bedrock (moderately limited)	1.00 0.50 0.46	Very limited: slope (very limited) wetness (moderately limited) depth to bedrock (moderately limited)	1.00 0.50 0.46	Very limited: depth to bedrock (very limited) slope (very limited) wetness (moderately limited)	1.00 1.00 0.50	Very limited: percs slowly (very limited) slope (very limited) depth to bedrock (very limited)	1.00 1.00 1.00
73005: Ocie-----	Moderately limited: slope (moderately limited) wetness (slightly limited)	0.45 0.28	Moderately limited: slope (moderately limited) wetness (slightly limited)	0.45 0.28	Limited: slope (limited) wetness (slightly limited)	0.70 0.28	Limited: slope (limited) depth to bedrock (moderately limited) wetness (slightly limited)	0.70 0.39 0.28	Very limited: percs slowly (very limited) depth to bedrock (very limited) wetness (very limited)	1.00 1.00 1.00
73007: Plato-----	Limited: wetness (limited) too acid (slightly limited)	0.68 0.12	Limited: wetness (limited) too acid (slightly limited)	0.68 0.12	Limited: wetness (limited) too acid (slightly limited)	0.68 0.12	Limited: wetness (limited) too acid (slightly limited)	0.68 0.12	Very limited: percs slowly (very limited) wetness (very limited) too acid (slightly limited)	1.00 1.00 0.03
73008: Viraton-----	Moderately limited: wetness (moderately limited)	0.55	Moderately limited: wetness (moderately limited)	0.55	Moderately limited: wetness (moderately limited) slope (slightly limited)	0.55 0.10	Moderately limited: wetness (moderately limited) slope (slightly limited)	0.55 0.10	Very limited: percs slowly (very limited) wetness (very limited) slope (moderately limited)	1.00 1.00 0.31
73059: Pomme-----	Not limited		Not limited		Not limited		Not limited		Very limited: percs slowly (very limited)	1.00

Table 17.--Waste Management--Continued

Map symbol and soil name	Land application of manure and food-processing waste		Land application of municipal sewage sludge		Disposal of wastewater by irrigation		Treatment of wastewater by slow rate process		Treatment of wastewater by rapid infiltration process	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
73075: Hobson-----	Moderately limited: too acid (moderately limited) wetness (moderately limited)	0.54 0.36	Moderately limited: too acid (moderately limited) wetness (moderately limited)	0.54 0.36	Moderately limited: too acid (moderately limited) wetness (moderately limited)	0.54 0.36	Moderately limited: too acid (moderately limited) wetness (moderately limited)	0.54 0.36	Very limited: percs slowly (very limited) wetness (very limited)	1.00 1.00
74625: Hartville-----	Limited: percs slowly (limited) wetness (moderately limited)	0.99 0.55	Limited: percs slowly (limited) wetness (moderately limited)	0.99 0.55	Limited: percs slowly (limited) wetness (moderately limited) slope (moderately limited)	0.99 0.55 0.31	Limited: percs slowly (limited) wetness (moderately limited) slope (moderately limited)	0.99 0.55 0.31	Very limited: percs slowly (very limited) wetness (very limited) slope (limited)	1.00 1.00 0.91
74641: Secesh-----	Limited: flooding (limited)	0.90	Limited: flooding (limited)	0.90	Limited: flooding (limited)	0.90	Limited: flooding (limited)	0.90	Very limited: percs slowly (very limited) flooding (moderately limited)	1.00 0.60
75375: Horsecreek----	Limited: flooding (limited)	0.90	Limited: flooding (limited)	0.90	Limited: flooding (limited)	0.90	Limited: flooding (limited)	0.90	Very limited: percs slowly (very limited) flooding (moderately limited)	1.00 0.60
75377: Racket-----	Very limited: flooding (very limited) poor filter (very limited)	1.00 1.00	Very limited: flooding (very limited) poor filter (very limited)	1.00 1.00	Very limited: flooding (very limited) poor filter (very limited)	1.00 1.00	Very limited: flooding (very limited) poor filter (very limited)	1.00 1.00	Very limited: percs slowly (very limited) flooding (very limited)	1.00 1.00
75378: Sturkie-----	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: percs slowly (very limited) flooding (very limited)	1.00 1.00
99000: Pits, quarries	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 17.--Waste Management--Continued

Map symbol and soil name	Land application of manure and food-processing waste		Land application of municipal sewage sludge		Disposal of wastewater by irrigation		Treatment of wastewater by slow rate process		Treatment of wastewater by rapid infiltration process	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
99001: Water-----	Not rated		Not rated		Not rated		Not rated		Not rated	
99004: Kanima-----	Very limited: slope (very limited) droughty (slightly limited)	1.00 0.28	Very limited: slope (very limited) droughty (slightly limited)	1.00 0.28	Very limited: slope (very limited) droughty (slightly limited)	1.00 0.28	Very limited: slope (very limited)	1.00	Very limited: percs slowly (very limited) slope (very limited)	1.00 1.00
99007: Dam-----	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 18.--Engineering Index Properties

(Absence of an entry indicates that data were not estimated. For an explanation of the abbreviations in the USDA texture column, see "Texture, soil" in the Glossary)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
40000:												
Barden-----	0-8	SIL	CL	A-4, A-6	0	0	100	100	90-100	75-85	25-35	8-15
	8-23	SIC, SICL, CL	CH, CL	A-7	0	0	100	100	90-100	80-95	40-60	25-40
	23-68	SICL, CL	CL	A-6, A-7	0	0	100	90-100	85-100	60-90	30-45	15-25
	68-74	WB	---	---	---	---	---	---	---	---	---	---
40001:												
Bolivar-----	0-9	L	ML	A-4	0	0	100	90-100	80-90	50-60	15-30	NP-5
	9-25	L, SCL, CL	CL, SC	A-4, A-6	0	0-5	90-100	85-100	80-95	40-80	20-35	6-15
	25-38	CN-SCL, CN-CL	CL, SC, SC-SM	A-4, A-6	0-5	0-10	65-95	60-90	55-80	35-55	25-35	8-15
	38-42	WB	---	---	---	---	---	---	---	---	---	---
	42-80	UWB	---	---	---	---	---	---	---	---	---	---
40004:												
Barden-----	0-7	L	CL	A-4, A-6	0	0	100	95-100	85-100	60-75	25-35	8-15
	7-16	L	CL	A-4, A-6	0	0	100	95-100	85-100	60-75	25-35	8-15
	16-65	SIC, SICL, CL, C	CH, CL	A-7	0	0	100	95-100	90-100	70-90	40-60	25-40
	65-80	SICL, CL	CL	A-6, A-7	0	0	100	90-100	80-100	65-90	30-45	15-25
40005:												
Sylvania-----	0-6	L	CL, CL-ML, ML	A-4, A-6	0	0-10	80-100	75-100	65-95	50-75	20-35	2-15
	6-11	GR-L, L	CL, CL-ML, ML, SC	A-4, A-6	0	0-10	70-100	65-100	50-95	35-75	20-35	2-15
	11-15	L, GRV-SCL, CL	CL, SC	A-6	0	0-15	50-95	30-95	20-85	15-70	25-40	10-25
	15-45	C, SIC, GR-C	CH, CL	A-7	0	0	60-100	55-100	55-100	50-95	45-70	25-45
	45-55	WB	---	---	---	---	---	---	---	---	---	---
40006:												
Barco-----	0-7	L	CL	A-4, A-6	0	0	100	100	85-95	60-75	20-35	8-15
	7-14	L	CL	A-4, A-6	0	0	100	100	85-95	60-75	20-35	8-15
	14-23	L, SCL, CL	CL, SC	A-6	0	0-5	85-100	85-100	75-100	45-80	25-40	10-30
	23-31	L, SCL, CL, CB- CL	CL, SC	A-6, A-7	0	0-30	85-100	80-100	70-100	45-80	25-45	10-25
	31-39	WB	---	---	---	---	---	---	---	---	---	---
	39-80	UWB	---	---	---	---	---	---	---	---	---	---
Sylvania-----	0-10	L	CL, CL-ML, ML	A-4, A-6	0	0	95-100	90-100	85-95	60-75	20-35	2-15
	10-16	L	CL, CL-ML, ML	A-4, A-6	0	0-5	80-100	75-100	65-95	50-75	20-35	2-15
	16-32	L, CL	CL, SC	A-7, A-6	0	0-5	90-100	85-100	70-90	45-80	30-50	10-25
	32-49	L, CL, GR-L	CL, SC, GC	A-6	0	0-10	60-100	55-100	50-100	40-80	35-50	15-30
	49-60	UWB	---	---	---	---	---	---	---	---	---	---

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
40007: Eldorado-----	0-8	GR-L	CL, ML, SC, SM, GC	A-2, A-4	0-5	0-10	55-80	50-75	45-70	30-50	20-30	2-10
	8-13	GRV-SIL, CB-L	GC	A-2, A-4	0-5	0-30	40-75	35-70	30-70	25-65	20-30	2-10
	13-33	CBV-CL, GRX- SICL	GC, GM	A-2, A-2-6	0-5	5-40	25-65	20-60	20-60	15-55	30-40	5-15
	33-60	CB-C, GRX-SICL, CBV-C	GM, GC	A-2, A-6, A-7	0-15	0-35	35-65	30-60	25-60	20-55	40-60	5-30
40008: Parsons-----	0-8	SIL	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	70-90	25-35	7-15
	8-16	SIL	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	70-90	25-35	7-15
	16-31	C, SICL, SIC	CH, CL	A-6, A-7	0	0	100	100	95-100	80-95	40-70	20-40
	31-60	C, SICL, SIC	CH, CL	A-6, A-7	0	0	100	100	95-100	80-95	40-70	15-40
40009: Sylvania-----	0-7	L	CL, CL-ML, ML	A-4, A-6	0	0	90-100	85-100	70-95	50-75	20-35	2-15
	7-10	GR-CL, GR-L	CL	A-7, A-6	0	0-5	65-100	60-100	55-95	50-80	25-45	11-25
	10-28	C, SIC, CL	CL, CH	A-7	0	0	90-100	85-100	80-95	70-95	45-70	25-45
	28-42	SICL, CN-SIC	CL, CH	A-6, A-7	0	0	65-100	60-100	55-95	50-90	40-70	20-45
	42-52	WB	---	---	---	---	---	---	---	---	---	---
40010: Collinsville----	0-6	FSL	CL-ML, ML, SC-SM, SM	A-2, A-4	0	0-5	80-100	75-95	55-80	30-50	10-30	NP-11
	6-15	GR-FSL, CB-L	CL-ML, ML, SC, SM, GC-GM	A-2, A-4	0	0-15	50-100	45-95	40-90	25-75	10-30	NP-11
	15-80	UWB	---	---	---	---	---	---	---	---	---	---
Rock outcrop.												
44001: Quarles-----	0-8	SIL	CL	A-4, A-6	0	0	100	100	95-100	85-100	25-35	7-15
	8-25	SIL	CL	A-4, A-6	0	0	100	100	90-100	80-100	25-35	7-15
	25-80	SICL, SIC	CH, CL	A-7, A-6	0	0	100	100	90-100	80-100	35-60	15-40
46000: Humansville-----	0-7	SIL	CL	A-4, A-6	0	0	100	95-100	90-100	80-95	30-35	9-20
	7-24	SIL, SICL	CL	A-4, A-6, A-7-6, A-7	0	0	95-100	85-100	75-100	70-95	30-45	9-20
	24-60	SIC, SICL	CH, CL	A-7	0	0	95-100	85-100	75-100	70-95	35-55	15-30
66000: Moniteau-----	0-6	SIL	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	85-100	25-35	5-15
	6-18	SIL	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	85-100	25-35	5-15
	18-60	SICL, SIL	CL	A-6, A-7	0	0	100	100	85-100	80-95	30-45	15-25

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
66001: Dameron-----	0-9	SIL	CL	A-6	0	0-1	95-100	90-100	85-100	70-95	25-40	10-20
	9-15	SIL, SICL	CL	A-6	0	0-1	95-100	90-100	85-100	70-95	30-40	15-25
	15-24	GRV-SICL, GR- SICL, GRV-CL	CL, GC, SC	A-2-6, A-6	0	0-15	35-75	25-70	25-70	20-65	30-40	10-25
	24-72	SICL	CL	A-6	0	0-1	85-100	75-100	70-100	45-95	25-40	10-20
	72-80	GRX-CL	GC	A-2-6	0	0	25-30	20-25	20-25	15-20	30-40	10-20
70000: Bona-----	0-6	GR-SIL	CL, GC, GC-GM, SC	A-4	0	0-5	55-80	50-75	45-75	35-70	20-30	5-10
	6-18	GR-SIL, GRV-SIL	GC, GC-GM	A-1-b, A-2, A-4	0	0-10	30-65	25-60	20-55	15-50	25-30	5-10
	18-24	GRX-SIL, GRX- SICL	GC	A-2-6, A-2-7	0	0-15	20-40	15-35	10-30	5-20	25-45	10-20
	24-30	GRV-C, GRV-SIC	GM	A-2-7, A-7	0	0-5	35-55	30-50	25-45	20-40	55-70	20-30
	30-72	C, SIC	MH	A-7	0	0-5	80-100	75-100	70-95	65-90	55-70	20-30
	72-80	UWB	---	---	---	---	---	---	---	---	---	---
70001: Bona-----	0-7	GR-SIL	CL, GC, GC-GM, SC	A-4, A-6	0	0-15	55-90	50-85	45-85	35-80	20-35	5-15
	7-12	GR-SIL, GRV-SIL	GC, GC-GM	A-1-b, A-2, A-4, A-6	0	0-25	30-65	25-60	20-55	15-50	25-35	5-15
	12-19	GRX-SIL, GRX- SICL, GRV-SIL	GC	A-2-6, A-2-7, A-6	0	0-30	15-65	10-60	5-55	5-50	25-45	10-20
	19-45	GRV-C, GRV-SIC	GM, GC	A-2-7, A-7	0	0-15	35-55	30-50	25-45	20-40	55-70	20-40
	45-62	C, SIC	MH, CH	A-7	0	0-15	80-100	75-100	70-95	65-90	55-70	20-40
	62-80	UWB	---	---	---	---	---	---	---	---	---	---
70002: Alsup-----	0-4	GR-SIL	CL-ML, CL	A-4, A-6	0-3	0-5	70-85	50-75	50-75	50-70	20-40	4-15
	4-13	GR-SIL, GRV-SIL	CL-ML, CL	A-4, A-6	0-5	0-5	50-90	45-80	40-75	30-65	20-40	6-15
	13-23	SICL, SIC, C	CL	A-7	0-5	0-10	90-100	85-100	85-100	85-100	40-50	20-30
	23-39	CN-SICL, CN- SIC, C	CH, CL	A-7	0-5	0-20	55-100	50-100	50-100	50-100	40-65	25-40
	39-44	CN-SICL, SICL	CL	A-7	0	0-10	55-100	50-90	45-90	35-85	40-60	20-30
	44-60	WB	---	---	---	---	---	---	---	---	---	---
70003: Alsup-----	0-7	GR-SIL	CL	A-6	0-3	0-5	70-85	50-75	50-70	50-65	30-40	10-15
	7-12	GR-SIL, GRV-SIL	CL	A-6	0-5	0-5	50-80	45-75	40-70	30-60	30-40	10-15
	12-40	SICL, SIC, C	CL	A-7	0-5	0-10	90-100	85-100	85-100	85-100	40-50	20-30
	40-56	CNV-SICL, CN- SIC, CNX-SICL	CH, CL	A-7	0-5	0-20	35-80	30-75	30-75	25-70	40-60	25-40
	56-66	WB	---	---	---	---	---	---	---	---	---	---

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches						
							4	10	40	200		
	In				Pct	Pct					Pct	
70004: Alsup-----	0-4	SIL	CL	A-6	0-3	0-5	80-90	75-90	70-85	65-80	30-40	10-15
	4-9	GR-SIL, GRV- SIL, SIL	CL	A-4, A-6	0-5	0-5	50-90	45-90	40-80	30-80	25-40	9-15
	9-20	SICL, SIC, C	CL	A-7	0-5	0-10	80-100	80-100	80-100	80-100	40-50	20-30
	20-41	CNV-SICL, CN- SIC, CN-SICL	CH, CL, GC	A-6, A-7	0-5	0-20	45-100	45-90	40-90	35-85	35-60	15-40
	41-46	WB	---	---	---	---	---	---	---	---	---	---
70006: Crelton-----	0-8	SIL	CL, CL-ML, ML	A-4, A-6	0	0	90-100	90-100	85-100	70-90	20-40	2-15
	8-27	SICL, SIC, C	CL, ML	A-7	0	0	90-100	85-100	80-100	75-85	35-50	10-25
	27-37	GR-SICL, GRV- SIL	GC	A-2, A-6, A-7	0	0-5	35-65	30-60	30-60	20-50	30-45	10-25
	37-60	GRV-C, CBX-C, GR-C, C	CH, GC, SC, GM	A-2, A-7	0	0-55	45-95	40-90	35-90	30-80	55-80	25-60
70007: Cliquot-----	0-5	GR-L	GC, GC-GM, SC, SC-SM	A-4	0	0-15	55-80	50-75	45-70	35-50	15-25	5-15
	5-26	GRV-L, GR-L, GRV-SIL, GRV- FSL	GC, GC-GM, GM	A-2-4, A-2-6, A-4	0	0-30	35-80	30-75	25-70	15-50	20-35	3-15
	26-49	C, CN-SIC, CN- SICL	CL, CH, SC	A-7	0	0-15	55-100	50-100	50-95	45-85	40-65	15-35
	49-55	C, CN-SIC	CH, CL	A-7	0	0-15	65-100	60-100	60-95	55-85	45-65	20-35
	55-63	WB	---	---	---	---	---	---	---	---	---	---
	63-80	UWB	---	---	---	---	---	---	---	---	---	---
70008: Goss-----	0-6	GR-SIL	CL, CL-ML, ML	A-2, A-4	0-5	0-10	55-80	50-75	45-70	30-65	20-30	2-10
	6-10	GRX-SIL, GRV- SIL	GC, GC-GM, GM	A-2, A-4	0-5	0-40	40-60	35-55	30-50	25-40	20-30	2-15
	10-14	CBV-C, GRX-SIC, GRV-SIC, GRV- SICL	GC, SC	A-2-7, A-7, A-6	0-5	5-45	30-70	20-65	20-50	20-45	35-70	15-35
	14-80	SIC, C, GR-C, CBV-C	CH, CL, GM, GC	A-7	0	0-40	50-100	45-100	42-95	40-95	45-65	15-35

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
70009: Goss-----	0-4	GR-SIL	CL, CL-ML, ML	A-4, A-2	0-5	0-10	55-80	50-75	45-70	30-65	20-30	2-10
	4-10	GRX-SIL, GRV-SIL, GR-SICL, CBV-SIL	GC, GC-GM, GM	A-2-4, A-2	0-5	5-40	35-70	30-65	25-60	20-45	20-30	2-10
	10-16	CBV-SIL, GRX-SIL, GRV-SIL, GRV-SICL	GC, SC	A-2-6, A-2-7, A-7	0-5	5-45	25-70	20-65	20-60	20-45	30-70	10-40
	16-60	CBV-C, C, GR-C, GRV-SIC	GC, CH, CL, GM	A-7	0	0-40	50-95	45-90	45-85	45-85	45-65	15-35
70010: Goss-----	0-3	CBV-SIL	GC, GC-GM, GM	A-2-4, A-2	0-5	20-55	50-80	45-75	40-70	30-65	20-30	2-10
	3-15	CBX-SIL, CBV-SIL, CB-SICL	GC, GC-GM, GM	A-2-4, A-2	0-5	15-45	40-60	35-55	30-50	25-35	20-30	2-10
	15-21	GR-SIC, GRX-SIC, GRV-SIC, GRV-SICL, GRX-SIL	GC, SC	A-2-6, A-2-7, A-7	0-5	5-30	35-70	20-65	20-50	20-45	30-70	10-40
	21-60	SIC, C, GRV-C, CBV-C	GC, CH, CL, GM	A-7	0	0-25	50-100	45-100	40-95	35-95	45-65	15-35
70011: Goss-----	0-9	GRV-SIL	GC, GC-GM, GM	A-4, A-2	0-5	0-40	40-60	35-55	30-50	25-45	20-30	2-10
	9-21	GRV-SIL, GR-SIL	GC, GC-GM, GM	A-2	0-5	5-40	30-60	28-55	25-50	25-45	20-30	2-10
	21-36	CBV-C, GRX-SIC, GRV-SIC, GRX-CL	GC, SC	A-2-7, A-7	0-5	5-45	25-70	15-65	15-50	10-45	45-70	20-40
	36-60	SIC, C, GR-C, GRV-C	GC, CH, CL, GM	A-7	0	0-10	55-100	50-100	45-95	40-90	45-65	15-35
Moko-----	0-7	GR-SIL	GC, CL	A-6	0-5	0-40	55-80	50-75	45-70	40-65	25-45	10-20
	7-12	CNX-SICL, CBV-SICL, FLV-SIL, CNV-SIL	CL, GC, SC	A-6, A-7	0-10	40-80	40-90	35-85	30-80	25-70	25-45	10-20
	12-80	UWB	---	---	---	---	---	---	---	---	---	---
70012: Hoberg-----	0-12	SIL	CL, CL-ML	A-4, A-6	0	0-5	85-100	75-100	70-95	60-90	25-35	7-15
	12-26	SIL, SICL, GR-SICL, GR-SIL	CL, GC, SC	A-6	0	0-10	60-95	50-90	45-85	40-80	30-40	10-20
	26-42	GRV-SICL, GRV-SIL, GR-SIL, CBX-SICL, CBX-SIL	CL, GC, SC	A-2-6, A-6	0	0-45	35-85	30-75	20-70	20-65	30-40	10-20
	42-62	GRV-C, GRV-SIC, CBX-C, CBX-SIC	CH, GC, MH, SC	A-2-7, A-7	0	0-45	35-65	30-60	30-60	25-55	50-75	25-40

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	sieve number--					
							4	10	40	200		
	In				Pct	Pct					Pct	
70014: Moko-----	0-5	GRV-CL	GC, CL	A-2, A-6	0-5	5-40	50-80	45-75	40-70	30-65	25-45	8-20
	5-13	CNX-SICL, CNX- CL, FLV-SIL, CNV-SIL	CL, GC, SC	A-6, A-7	0-10	40-80	65-90	60-85	55-80	40-80	25-45	8-20
	13-80	UWB	---	---	---	---	---	---	---	---	---	---
Rock outcrop.												
70040: Cliquot-----	0-3	FSL	SC, SC-SM, SM	A-2-4, A-2-6, A-4	0	0-10	80-100	75-100	60-80	30-50	15-25	3-15
	3-13	GRV-L, GR-L, GRV-SIL, GRV- FSL	GC, SC, GC-GM	A-2-4, A-2-6	0	0-25	35-70	30-65	25-55	15-35	15-35	4-15
	13-20	C, CN-SIC	CH, CL	A-7	0	0-15	55-100	50-100	50-95	45-85	45-70	20-40
	20-31	C, CN-SIC, CN-C	CH, CL	A-7	0	0-15	55-100	50-100	50-95	45-85	45-65	15-35
	31-41	C, CN-SIC, CN-C	CH, CL	A-7	0	0-15	55-100	50-100	50-95	45-85	45-60	15-35
	41-48	WB	---	---	---	---	---	---	---	---	---	---
	48-80	UWB	---	---	---	---	---	---	---	---	---	---
Bolivar-----	0-7	FSL	SM, ML	A-4	0	0	90-100	85-100	65-85	40-55	10-30	NP-5
	7-13	L, FSL	ML, SM	A-4	0	0	90-100	85-100	65-95	40-70	10-30	NP-5
	13-18	L, SCL, CL, GR- SCL	SC, CL	A-6, A-2	0	0-10	65-100	60-100	50-95	30-75	15-40	10-25
	18-26	CN-SCL, GR-CL, GR-SCL, FLV- SCL	SC, SC-SM, CL	A-4, A-6	0-10	5-60	35-100	30-95	30-80	20-65	25-35	5-25
	26-38	WB	---	---	---	---	---	---	---	---	---	---
	38-80	UWB	---	---	---	---	---	---	---	---	---	---
70041: Goss-----	0-5	GRV-SIL	GC, GC-GM, GM	A-2, A-4	0	0-30	40-60	35-55	30-50	25-45	20-30	2-10
	5-16	CBV-SICL, CBV- SIL, GRV-SIL	GC, GC-GM, GM	A-4, A-2	0	10-40	40-65	35-60	30-55	25-50	20-30	2-10
	16-22	CBV-SICL, GRV- SICL	GC, GC-GM, GM, CL	A-2, A-6	0	10-45	40-60	35-55	30-55	25-55	20-40	2-20
	22-30	CB-SICL, CBV- SIC, CBV-C, GRV-C	GC, SC	A-2-7, A-7	0	10-45	45-70	20-65	20-60	20-55	45-50	15-40
	30-60	CB-SICL, CBV- SIC, CBV-C, GRV-C	GC, CH	A-2-7, A-7	0	10-55	45-90	20-85	20-80	20-70	50-70	25-40

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
70042: Goss-----	0-2	GRV-SIL	GC, GC-GM, GM	A-2	0-5	0-30	30-60	25-55	25-50	20-45	20-30	2-10
	2-10	GRV-SIL	GC, GC-GM, GM	A-2	0-5	0-30	40-60	35-55	30-50	25-45	20-30	2-10
	10-16	GRV-SICL, GRV-SIL	GC, GC-GM, GM	A-2	0-5	0-30	40-60	35-55	30-50	25-45	20-30	2-10
	16-55	GR-SIC, GRX-SIC, GRV-C, GRV-SICL	GC, SC	A-2-7, A-7	0-5	0-30	35-70	20-65	20-60	20-60	35-70	15-40
	55-68	SIC, C, GR-C, GRV-C	CH, CL, GC, GM	A-2-7, A-7	0	0-10	40-100	35-100	30-95	25-95	45-65	15-35
70043: Sonsac-----	0-3	CBV-SIL	GC, SC, CL	A-4, A-6	0-15	25-55	55-80	50-75	45-70	40-65	20-35	5-15
	3-6	GRV-SIL, GRX-SIL, CBV-SIL	GC	A-2, A-6, A-4	0-15	10-50	35-70	30-65	25-60	20-50	15-40	5-20
	6-9	GRX-SIL, GRV-SICL, GRV-SIL, CBV-SICL	GM, GC, SM	A-7, A-2	0-10	0-55	40-80	35-75	30-70	25-65	45-70	20-35
	9-31	GR-C, GRV-SIC, CBV-C	GC	A-7	0-10	0-55	30-80	25-75	20-70	20-65	50-70	25-45
	31-80	UWB	---	---	---	---	---	---	---	---	---	---
Moko-----	0-5	GRV-SICL	GC, CL	A-6, A-7	0-5	0-20	35-60	30-55	30-55	25-50	25-45	10-20
	5-12	CNV-SICL, CNV-CL, FLV-SIL, CNV-SIL, GRV-SICL	CL, GC, SC	A-6, A-7	0-10	0-40	45-90	40-85	40-80	40-80	25-45	10-20
	12-80	UWB	---	---	---	---	---	---	---	---	---	---
Rock outcrop.												
70044: Sonsac-----	0-4	GR-SIL	CL, CL-ML	A-4, A-6	0-5	0-15	55-80	50-75	50-70	40-60	20-35	5-15
	4-13	GRV-SIL, GRX-SIL, CBV-SIL	GC	A-2-4, A-2-6, A-4, A-6	0-15	0-50	30-55	25-50	20-50	15-40	15-40	5-20
	13-22	GRX-SIL, GRV-SICL, GRV-SIL, CBV-SICL, CBX-SICL	GC, GM	A-7, A-2-7, A-2-6	0-8	0-55	40-75	35-70	30-65	25-60	30-70	10-35
	22-37	GR-C, CBV-C, GRV-SIC	GC, MH, GM	A-7, A-2-7	0-8	0-55	30-80	25-75	25-70	20-65	50-70	20-45
	37-80	UWB	---	---	---	---	---	---	---	---	---	---

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
70044: Moko-----	0-6	GR-SIL	GC	A-6	0-5	0-15	55-80	50-75	45-70	35-65	25-45	10-20
	6-14	CNX-SICL, CNV- CL, FLV-SIL, CNV-SIL, GRV- SICL	CL, GC, SC	A-6, A-7	0-10	0-70	50-90	45-85	45-80	40-80	25-45	10-25
	14-80	UWB	---	---	---	---	---	---	---	---	---	---
70047: Wanda-----	0-15	SIL	CL, CL-ML	A-4, A-6	0	0	90-100	85-100	80-95	65-90	25-35	5-15
	15-26	SICL, GR-SICL	CL	A-4, A-6, A-7	0	0	75-100	70-95	65-95	55-90	30-45	9-25
	26-44	GR-SICL, SICL	CL, GC	A-6, A-7	0	0-5	55-90	50-85	50-80	45-70	35-45	10-25
	44-60	GR-SIC, GRV- SIC, GR-SICL	CL, CH, GC, SC	A-2-7, A-7, A-6	0-2	0-5	35-80	30-75	30-70	25-65	35-60	10-30
70048: Alsop-----	0-5	SIL	CL-ML, CL	A-4, A-6	0-5	0-5	80-100	75-100	70-100	60-90	25-40	5-20
	5-14	GR-SIL, L	CL	A-4, A-6	0-5	0-10	75-100	70-100	65-100	45-90	25-40	8-20
	14-24	GRV-SIL, GR-SIL	CL, GC	A-2-6, A-7	0	0-15	30-85	25-80	25-75	20-70	30-50	10-30
	24-50	SIC, C, SICL	CH, CL	A-7	0	0-5	80-100	75-100	75-100	65-95	40-60	25-40
	50-60	WB	---	---	---	---	---	---	---	---	---	---
70052: Arnica-----	0-6	L	CL-ML, CL	A-4	0	0	95-100	90-100	85-95	60-75	20-35	5-15
	6-14	CL, L, SCL, SIL	CL, SC	A-7, A-6	0	0	90-100	85-100	80-100	45-80	25-45	10-20
	14-23	CL, L	CL	A-6, A-7	0	0	90-100	85-100	80-100	50-80	25-45	10-20
	23-80	CL, L	CL	A-7, A-6	0	0	90-100	85-100	80-100	50-80	25-45	10-20
70053: Courtois-----	0-4	SIL	CL, CL-ML	A-6, A-4	0	0	90-100	85-100	80-95	70-90	20-35	5-15
	4-30	SIC, SICL, SIL	CL	A-6, A-7	0	0-5	90-100	85-100	80-100	75-95	30-50	11-30
	30-49	STX-C, GR-C, GRV-C	GC, CL, CH	A-7, A-2-7	0-30	0-30	45-85	40-80	35-75	30-70	45-65	25-40
	49-80	C, GR-C, ST-C	CH	A-7	0-15	0-15	75-100	70-100	70-100	60-100	55-90	30-55
70054: Cliquot-----	0-4	GR-L	SC, GC, GC-GM	A-4	0	0-25	55-80	50-75	45-70	35-50	15-25	5-15
	4-10	GRV-L, GR-L, GRV-SIL, GRV- FSL	GC, GC-GM	A-2-4, A-2-6, A-4	0	0-30	35-80	30-75	25-70	15-50	20-35	3-15
	10-41	C, CN-SIC	CH	A-7	0	0-15	55-100	50-100	50-95	45-85	50-70	25-45
	41-48	C, CN-SIC	CH, CL	A-7	0	0-15	55-100	50-100	50-95	45-85	45-65	15-35
	48-55	C, CN-SIC, CNV- SIC	CH, CL, GC	A-7	0	0-15	45-95	40-90	35-90	30-85	40-65	15-30
	55-80	WB	---	---	---	---	---	---	---	---	---	---

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
71254:												
Cotter-----	0-10	SIL	CL	A-6	0	0	100	100	95-100	95-100	30-40	11-20
	10-33	SICL, SIL	CL	A-7, A-6	0	0	100	100	95-100	95-100	30-45	11-25
	33-80	SICL	CL	A-7, A-6	0	0	100	100	95-100	95-100	35-45	15-25
71750:												
Cleora-----	0-12	FSL	CL-ML, ML, SC-SM, SM	A-6, A-4	0	0	100	100	85-100	40-55	15-30	NP-12
	12-22	FSL	CL-ML, ML, SM, SC-SM	A-4, A-6	0	0	100	100	80-90	35-50	15-30	NP-12
	22-80	L, FSL	SC-SM, CL, SC, SM, CL-ML	A-6, A-4	0	0	100	100	85-100	40-75	15-30	NP-12
73000:												
Pomme-----	0-7	SIL	CL, CL-ML	A-4, A-6	0	0-5	80-100	75-95	65-95	50-90	25-35	5-15
	7-19	SICL, GR-SIL, GR-SICL, CL	CL	A-4, A-6, A-7-6	0	0-10	70-95	65-90	50-85	50-75	35-45	8-20
	19-57	GRV-SICL, CBV- SICL	GC	A-2, A-6, A-7-6	0	0-30	35-55	30-50	25-45	20-40	40-50	15-25
	57-86	GRX-C, CBV-C	GC, GM	A-2-7, A-7-6	0	0-45	15-45	15-45	15-45	15-40	50-70	20-40
73003:												
Ocie-----	0-2	GRV-SIL	CL, CL-ML, SC, SC-SM, GC-GM	A-1, A-2, A-4	0	0-15	30-80	25-75	20-65	15-60	0-25	4-10
	2-14	GRV-SIL, GRV-L, GR-SIL	GC, GC-GM	A-1-b, A-2-4, A-2-6	0-5	0-20	30-65	25-60	20-60	15-55	20-30	4-15
	14-19	GRV-SIL, GRV- CL, GRX-SIL, GRV-SICL	GC, GC-GM	A-6, A-1-b, A-2-4, A-2-6	0-5	0-20	25-55	20-50	20-45	15-45	20-45	5-25
	19-44	GR-C, C, SIC	CH	A-7	0-5	0-15	75-95	70-90	65-85	60-80	50-70	30-40
	44-80	UWB	---	---	---	---	---	---	---	---	---	---
Gatewood-----	0-4	GR-SIL	CL, GC, SC, GC-GM	A-2, A-4, A-6	0	0-15	55-80	50-75	44-70	30-65	21-35	4-15
	4-7	GR-SIL, GRV-SIL	CL, GC, SC	A-2, A-4, A-6	0	0-15	40-80	35-75	30-75	30-70	25-35	7-15
	7-28	GR-SIC, GR-C, C	CH	A-7	0-5	0-10	65-95	60-90	55-90	50-85	55-75	30-45
	28-80	UWB	---	---	---	---	---	---	---	---	---	---

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
73005: Ocie-----	0-4	GR-SIL	GM, CL, CL-ML, SC, SC-SM	A-4	0	0-15	55-80	50-75	45-65	40-60	0-25	3-10
	4-10	GRV-SIL, GRV-L, GR-SIL	GC, GC-GM	A-1-b, A-2-4, A-2-6	0-5	0-20	40-55	20-50	20-45	15-35	20-30	4-15
	10-19	GRV-SIL, GRV- CL, GRX-SIL, GRV-SICL	GC, GC-GM	A-1-b, A-2-4, A-2-6	0-5	0-20	40-55	20-50	20-45	15-35	20-30	5-15
	19-52	GR-C, C, SIC	CH	A-7	0-5	0-30	75-95	70-90	65-85	60-80	50-70	30-40
	52-60	WB	---	---	---	---	---	---	---	---	---	---
73007: Plato-----	0-5	SIL	CL-ML, CL	A-4	0	0	100	95-100	90-100	80-90	20-30	5-15
	5-9	SIL	CL, CL-ML	A-4	0	0	100	95-100	90-100	80-90	20-30	5-15
	9-29	SICL, SIC, C	CH, CL	A-7, A-6	0	0	85-100	80-100	75-95	65-90	35-60	15-35
	29-60	SIL, SICL, GR- SIL	CL, CL-ML	A-4, A-6	0	0-10	60-95	55-90	50-85	45-80	25-40	5-20
73008: Viraton-----	0-6	SIL	CL, CL-ML	A-4, A-6	0	0	80-100	75-100	70-95	65-85	20-30	5-11
	6-21	SIL, GR-SICL, SICL	CL	A-4, A-6	0	0-5	60-100	55-100	50-95	50-90	25-35	8-15
	21-30	GRV-SIL, GRV- SICL, GR-SIL	CL, GC	A-2, A-4, A-6	0	0-15	35-65	30-60	25-60	25-50	25-35	8-15
	30-60	GRV-C, GRX-C, GRX-SIC, GRX- SICL, GR-C	GC, CH, MH	A-2-6, A-6, A-7	0	0-30	25-80	20-75	15-70	15-65	35-65	10-35
73059: Pomme-----	0-8	SIL	CL, CL-ML	A-4, A-6	0	0-5	80-100	75-100	65-95	50-90	20-30	5-11
	8-26	SICL, GR-SIL, GR-SICL, CL, SIL	CL	A-4, A-6	0	0-10	70-95	65-90	50-85	50-75	25-40	9-20
	26-44	GRV-SICL, CBV- SICL, GR-L, GRV-L	GC	A-2, A-6, A-7-6	0	0-30	25-65	25-60	25-50	20-40	30-45	13-25
	44-72	GRX-C, CBV-C, GR-C	GC, CL	A-7-6, A-2, A-6	0	0-45	20-75	20-70	20-65	15-55	30-70	15-40

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
73075:												
Hobson-----	0-4	L	CL, CL-ML	A-4, A-6	0	0	90-100	90-100	80-90	60-65	20-30	5-12
	4-8	L	CL, CL-ML	A-4, A-6	0	0	90-100	90-100	80-90	60-65	20-30	5-12
	8-19	SCL, CL, L	CL, SC	A-4, A-6	0	0	85-100	85-100	70-95	45-75	25-40	5-15
	19-40	GR-CL, CL, FSL, L	CL, GC, GC-GM, SC-SM	A-4, A-6	0	0-10	55-100	50-100	50-95	40-75	20-35	5-15
	40-72	GRV-SCL, GRV-CL, CL	GC, GC-GM, CL	A-1, A-6, A-4, A-2	0	0-10	40-100	35-100	30-95	20-75	25-40	5-15
74625:												
Hartville-----	0-6	SIL	CL, ML	A-4, A-6	0	0	95-100	90-100	90-100	85-100	30-40	7-20
	6-10	SIL, SICL	CL	A-6, A-7	0	0	95-100	90-100	90-100	85-95	35-50	10-25
	10-31	SIC, SICL	CL, CH	A-7	0	0	95-100	90-100	90-100	85-95	45-60	20-40
	31-60	SIC, C, SICL	CH, CL	A-7	0	0-5	90-100	85-100	80-100	70-95	45-60	20-40
74641:												
Secesh-----	0-8	SIL	ML, CL-ML	A-4	0	0	85-100	80-100	75-95	60-90	20-30	3-10
	8-14	SICL, SIL	CL, CL-ML	A-4, A-6	0	0	80-100	75-100	70-100	60-95	25-35	5-15
	14-24	GR-SICL, GR-SIL, L	CL, GC, SC	A-6	0	0-5	65-95	55-90	30-75	25-65	30-40	10-20
	24-60	GRV-CL, SICL, GR-SICL, GR-CL	CL, GC, SC	A-6	0	0-20	55-95	50-90	50-85	40-75	30-40	10-20
75375:												
Horsecreek-----	0-9	SIL	CL	A-4	0	0	95-100	95-100	85-100	70-100	20-35	5-15
	9-18	SIL	CL	A-4	0	0	95-100	90-100	80-100	65-100	20-35	5-15
	18-60	SIL, SICL	CL	A-4, A-6, A-7	0	0	95-100	90-100	80-100	65-100	25-45	5-25
75377:												
Racket-----	0-10	SIL	CL, CL-ML	A-4, A-6	0	0	90-100	85-100	75-95	55-85	25-35	5-12
	10-24	L, SIL	CL, CL-ML, SC	A-4, A-6	0	0	90-100	85-100	65-95	45-85	25-35	5-12
	24-38	SIL, L, SICL	CL, CL-ML	A-4, A-6	0	0	80-100	75-100	70-95	55-95	25-40	5-20
	38-60	SR- GRX-S GR-LS GRX-SL, GR-SL	GC, GM, GP-GM, SM, SP-SM, SC	A-1, A-2-4	0	0-15	30-70	20-65	10-50	5-30	20-30	3-9
75378:												
Sturkie-----	0-9	SIL	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	85-100	75-95	20-34	5-13
	9-19	SIL, SICL	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	85-100	75-95	23-38	7-15
	19-60	SIL, SICL	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	85-100	75-95	23-38	7-15
99000. Pits, quarries												
99001. Water												

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
99004: Kanima-----	0-8	CNV-SIL	GC	A-6, A-2-6	0	0-10	40-55	35-50	35-50	30-40	30-40	12-20
	8-60	CNX-SIL, GRV- SICL, GRV-L, CNV-SIL	GC	A-2, A-4, A-6	0	0-10	30-55	25-50	20-50	15-40	30-40	8-20
99007. Dam												

Table 19.--Physical Properties of the Soils

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer. Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
40000: Barden-----	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
	0-8	5-35	50-70	15-27	1.40-1.50	4.00-14.00	0.21-0.24	0.0-2.9	1.0-3.0	.43	.43	3	6	48
	8-23	5-30	45-60	35-50	1.25-1.40	0.42-1.40	0.11-0.19	6.0-8.9	0.5-2.0	.24	.24			
	23-68	5-40	30-60	27-40	1.30-1.45	1.40-4.00	0.10-0.14	3.0-5.9	0.1-0.5	.37	.37			
	68-74	---	---	---	---	0.00-1.40	---	---	---	---	---			
40001: Bolivar-----	0-9	40-52	30-45	6-20	1.20-1.40	4.00-14.00	0.19-0.21	0.0-2.9	0.5-2.0	.28	.28	3	5	56
	9-25	30-60	20-40	15-30	1.30-1.50	4.00-14.00	0.12-0.16	3.0-5.9	0.0-0.5	.28	.32			
	25-38	35-60	20-40	20-30	1.35-1.55	4.00-14.00	0.09-0.12	0.0-2.9	0.0-0.5	.15	.24			
	38-42	---	---	---	---	0.42-1.40	---	---	---	---	---			
	42-80	---	---	---	---	0.01-0.42	---	---	---	---	---			
40004: Barden-----	0-7	20-45	40-50	15-27	1.40-1.50	4.00-14.00	0.18-0.20	0.0-2.9	1.0-3.0	.43	.43	3	6	48
	7-16	20-45	40-50	15-27	1.40-1.50	4.00-14.00	0.18-0.20	0.0-2.9	1.0-3.0	.43	.43			
	16-65	5-30	30-60	35-50	1.25-1.40	0.42-1.40	0.11-0.19	6.0-8.9	0.3-2.0	.24	.24			
	65-80	5-40	30-60	27-40	1.30-1.45	1.40-4.00	0.10-0.14	3.0-5.9	0.1-0.5	.37	.37			
40005: Sylvania-----	0-6	30-50	28-50	10-25	1.20-1.45	14.00-42.00	0.16-0.21	0.0-2.9	5.0-10	.24	.32	3	5	56
	6-11	30-50	28-50	10-25	1.20-1.45	14.00-42.00	0.10-0.21	0.0-2.9	3.0-5.0	.32	.43			
	11-15	35-60	10-40	18-35	1.40-1.60	4.00-14.00	0.06-0.16	3.0-5.9	2.0-3.0	.15	.28			
	15-45	5-15	20-50	40-70	1.30-1.50	1.40-4.00	0.10-0.16	6.0-8.9	1.0-2.0	.20	.24			
	45-55	---	---	---	---	0.00-1.40	---	---	---	---	---			
40006: Barco-----	0-7	35-55	30-50	10-25	1.20-1.45	4.00-14.00	0.16-0.20	0.0-2.9	1.0-4.0	.24	.24	3	5	56
	7-14	30-50	30-50	10-25	1.20-1.45	4.00-14.00	0.16-0.20	0.0-2.9	1.0-3.0	.32	.32			
	14-23	25-50	25-50	18-35	1.40-1.60	4.00-14.00	0.16-0.18	3.0-5.9	0.5-2.0	.24	.28			
	23-31	25-50	25-50	18-35	1.40-1.60	4.00-14.00	0.16-0.18	3.0-5.9	0.5-2.0	.15	.24			
	31-39	---	---	---	---	1.40-4.00	---	---	---	---	---			
	39-80	---	---	---	---	1.40-14.00	---	---	---	---	---			
Sylvania-----	0-10	30-50	35-50	10-25	1.20-1.45	4.00-14.00	0.16-0.20	0.0-2.9	1.0-4.0	.32	.32	3	6	48
	10-16	30-50	35-50	10-25	1.20-1.45	4.00-14.00	0.14-0.20	0.0-2.9	1.0-3.0	.37	.43			
	16-32	20-30	30-50	18-40	1.40-1.60	1.40-4.00	0.17-0.20	6.0-8.9	0.5-2.0	.24	.28			
	32-49	20-40	25-40	18-35	1.40-1.60	1.40-4.00	0.12-0.18	3.0-5.9	0.5-1.0	.15	.32			
	49-60	---	---	---	---	1.40-4.00	---	---	---	---	---			

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
40007: Eldorado-----	0-8	25-50	40-80	18-27	1.30-1.50	4.00-14.00	0.12-0.20	0.0-2.9	3.0-5.0	.15	.24	5	7	38
	8-13	5-40	40-75	18-27	1.30-1.50	4.00-14.00	0.06-0.18	0.0-2.9	2.0-3.0	.17	.28			
	13-33	5-50	35-70	27-35	1.35-1.65	4.00-14.00	0.05-0.09	3.0-5.9	1.0-2.0	.10	.28			
	33-60	5-30	10-60	35-65	1.35-1.65	4.00-14.00	0.05-0.09	3.0-5.9	0.5-2.0	.05	.17			
40008: Parsons-----	0-8	10-30	60-75	15-25	1.30-1.50	4.00-14.00	0.18-0.24	0.0-2.9	2.0-4.0	.49	.49	3	6	48
	8-16	10-30	60-70	15-25	1.30-1.50	4.00-14.00	0.16-0.22	0.0-2.9	1.0-2.0	.49	.49			
	16-31	5-30	20-70	35-65	1.40-1.70	0.01-0.42	0.10-0.18	6.0-8.9	1.0-2.0	.20	.20			
	31-60	10-40	30-65	35-60	1.40-1.70	0.01-0.42	0.10-0.18	6.0-8.9	0.3-1.0	.37	.37			
40009: Sylvania-----	0-7	30-50	30-50	10-27	1.20-1.45	14.00-42.00	0.14-0.20	0.0-2.9	5.0-10	.15	.20	3	5	56
	7-10	30-50	30-50	18-35	1.20-1.45	4.00-14.00	0.14-0.18	3.0-5.9	3.0-5.0	.10	.17			
	10-28	5-25	35-55	35-70	1.30-1.50	1.40-4.00	0.08-0.16	6.0-8.9	2.0-3.0	.17	.24			
	28-42	5-20	40-60	30-50	1.30-1.50	1.40-4.00	0.11-0.16	6.0-8.9	1.0-2.0	.17	.28			
	42-52	---	---	---	---	0.00-1.40	---	---	---	---	---			
40010: Collinsville-----	0-6	55-75	15-27	5-20	1.30-1.60	14.00-42.00	0.11-0.14	0.0-2.9	1.0-3.5	.10	.15	1	8	0
	6-15	40-75	10-40	5-20	1.40-1.70	14.00-42.00	0.08-0.15	0.0-2.9	0.5-2.0	.10	.17			
	15-80	---	---	---	---	1.40-14.00	---	---	---	---	---			
Rock outcrop.														
44001: Quarles-----	0-8	10-25	50-70	15-27	1.20-1.40	1.40-4.00	0.19-0.22	0.0-2.9	1.0-3.0	.37	.37	3	6	48
	8-25	10-25	50-70	15-27	1.20-1.40	1.40-4.00	0.17-0.20	0.0-2.9	0.5-1.0	.55	.55			
	25-80	5-20	45-65	27-50	1.40-1.60	0.42-1.40	0.17-0.20	6.0-8.9	0.2-0.5	.37	.37			
46000: Humansville-----	0-7	2-15	65-80	18-27	1.30-1.55	4.00-14.00	0.18-0.22	0.0-2.9	2.0-8.0	.37	.37	5	6	48
	7-24	2-15	55-75	18-35	1.40-1.60	1.40-4.00	0.17-0.22	0.0-2.9	1.0-5.0	.55	.55			
	24-60	2-15	45-70	27-50	1.40-1.60	0.42-4.00	0.12-0.18	3.0-5.9	0.5-2.0	.43	.43			
66000: Moniteau-----	0-6	4-10	60-80	15-27	1.20-1.40	4.00-14.00	0.21-0.23	0.0-2.9	1.0-2.0	.49	.49	5	6	48
	6-18	5-10	60-80	12-27	1.20-1.40	4.00-14.00	0.18-0.22	0.0-2.9	0.5-1.0	.55	.55			
	18-60	5-10	60-80	22-35	1.30-1.50	1.40-4.00	0.17-0.20	3.0-5.9	0.0-0.8	.49	.49			
66001: Dameron-----	0-9	3-15	60-80	20-27	1.25-1.40	4.00-14.00	0.19-0.22	0.0-2.9	2.0-4.0	.32	.32	4	6	48
	9-15	3-20	50-70	20-35	1.25-1.40	4.00-14.00	0.19-0.21	3.0-5.9	2.0-4.0	.28	.28			
	15-24	20-30	40-55	27-35	1.20-1.55	4.00-14.00	0.04-0.13	0.0-2.9	0.5-2.0	.10	.28			
	24-72	10-20	40-60	27-35	1.20-1.55	4.00-14.00	0.17-0.21	3.0-5.9	0.5-2.0	.24	.32			
	72-80	25-35	30-45	27-35	1.25-1.40	4.00-14.00	0.06-0.10	0.0-2.9	0.5-1.0	.05	.24			

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
70000:	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
Bona-----	0-6	20-35	50-70	12-27	1.30-1.50	4.00-14.00	0.12-0.22	0.0-2.9	1.0-4.0	.20	.37	3	8	0
	6-18	15-30	50-70	18-27	1.35-1.45	4.00-14.00	0.06-0.18	0.0-2.9	1.0-4.0	.10	.37			
	18-24	15-25	50-60	20-40	1.35-1.45	4.00-14.00	0.03-0.12	3.0-5.9	0.5-2.0	.10	.43			
	24-30	10-25	20-50	50-70	1.35-1.50	1.40-4.00	0.06-0.12	3.0-5.9	0.5-1.0	.05	.20			
	30-72	3-10	15-45	50-80	1.35-1.55	1.40-4.00	0.10-0.16	3.0-5.9	0.5-1.0	.05	.10			
	72-80	---	---	---	---	0.00-0.42	---	---	---	---	---			
70001:														
Bona-----	0-7	15-35	50-70	12-27	1.30-1.50	4.00-14.00	0.12-0.22	0.0-2.9	1.0-7.0	.17	.32	3	8	0
	7-12	15-30	50-70	18-27	1.35-1.45	4.00-14.00	0.06-0.18	0.0-2.9	1.0-5.0	.15	.32			
	12-19	15-25	45-60	20-40	1.35-1.45	4.00-14.00	0.03-0.12	3.0-5.9	0.5-3.0	.15	.32			
	19-45	10-25	20-50	50-70	1.35-1.50	1.40-4.00	0.06-0.12	3.0-5.9	0.5-2.0	.05	.15			
	45-62	3-10	10-45	50-81	1.35-1.55	1.40-4.00	0.10-0.18	3.0-5.9	0.5-1.0	.05	.10			
	62-80	---	---	---	---	0.01-0.42	---	---	---	---	---			
70002:														
Alsup-----	0-4	5-30	55-85	3-24	1.20-1.40	4.00-14.00	0.12-0.18	0.0-2.9	1.0-12	.37	.55	4	8	0
	4-13	5-30	55-75	5-24	1.20-1.40	4.00-14.00	0.12-0.17	0.0-2.9	0.5-2.0	.37	.55			
	13-23	1-20	35-65	35-70	1.20-1.50	1.40-4.00	0.12-0.21	3.0-5.9	0.5-1.0	.37	.37			
	23-39	1-20	35-65	35-60	1.30-1.50	1.40-4.00	0.12-0.21	6.0-8.9	0.0-1.0	.24	.24			
	39-44	1-20	45-65	30-40	1.40-1.70	1.40-4.00	0.06-0.17	6.0-8.9	0.0-0.5	.24	.43			
	44-60	---	---	---	---	0.01-0.42	---	---	---	---	---			
70003:														
Alsup-----	0-7	5-30	55-85	5-24	1.20-1.40	4.00-14.00	0.12-0.16	0.0-2.9	1.0-4.0	.24	.55	4	8	0
	7-12	5-30	55-85	5-24	1.20-1.40	4.00-14.00	0.12-0.16	0.0-2.9	0.5-2.0	.20	.64			
	12-40	1-20	35-65	35-70	1.20-1.50	1.40-4.00	0.12-0.17	3.0-5.9	0.5-1.0	.20	.24			
	40-56	1-20	45-70	27-50	1.40-1.70	1.40-4.00	0.06-0.12	6.0-8.9	0.0-0.5	.15	.43			
	56-66	---	---	---	---	0.01-0.42	---	---	---	---	---			
70004:														
Alsup-----	0-4	5-30	55-85	5-24	1.20-1.40	4.00-14.00	0.15-0.19	0.0-2.9	1.0-6.7	.28	.37	4	8	0
	4-9	5-30	55-80	5-24	1.20-1.40	4.00-14.00	0.12-0.19	0.0-2.9	0.5-2.0	.49	.64			
	9-20	1-20	35-60	35-70	1.20-1.50	1.40-4.00	0.15-0.19	6.0-8.9	0.5-1.0	.28	.37			
	20-41	1-20	45-65	27-50	1.40-1.70	1.40-4.00	0.09-0.13	3.0-5.9	0.0-0.5	.20	.49			
	41-46	---	---	---	---	0.01-0.42	---	---	---	---	---			
70006:														
Creldon-----	0-8	5-20	55-75	10-25	1.20-1.40	4.00-14.00	0.19-0.22	0.0-2.9	1.0-4.0	.32	.37	4	5	56
	8-27	5-20	30-60	27-50	1.30-1.50	1.40-4.00	0.15-0.17	3.0-5.9	1.0-2.0	.28	.32			
	27-37	5-20	45-65	20-35	1.60-1.90	0.01-0.42	0.04-0.07	0.0-2.9	0.1-0.5	.15	.49			
	37-60	10-25	20-35	40-70	1.30-1.55	4.00-14.00	0.04-0.08	6.0-8.9	0.1-0.5	.10	.15			

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
70007: Cliquot-----	0-5	40-50	35-50	8-18	1.30-1.50	4.00-14.00	0.11-0.15	0.0-2.9	4.0-8.0	.24	.37	4	8	0
	5-26	30-60	25-60	8-27	1.40-1.55	4.00-14.00	0.08-0.14	0.0-2.9	0.5-1.0	.20	.55			
	26-49	5-15	30-55	35-70	1.30-1.55	0.42-1.40	0.10-0.16	6.0-8.9	0.3-1.0	.24	.37			
	49-55	4-15	30-55	40-60	1.30-1.55	0.42-1.40	0.07-0.12	6.0-8.9	0.2-0.5	.20	.32			
	55-63	---	---	---	---	0.00-1.40	---	---	---	---	---			
	63-80	---	---	---	---	0.00-0.42	---	---	---	---	---			
70008: Goss-----	0-6	5-25	65-80	12-27	1.10-1.30	14.00-42.00	0.12-0.17	0.0-2.9	1.0-4.0	.28	.49	2	8	0
	6-10	5-20	65-80	10-27	1.10-1.30	14.00-42.00	0.06-0.10	0.0-2.9	0.0-2.0	.17	.49			
	10-14	5-20	35-70	27-50	1.30-1.50	4.00-14.00	0.04-0.09	3.0-5.9	0.0-1.0	.10	.43			
	14-80	5-20	20-50	50-85	1.40-1.60	4.00-14.00	0.06-0.10	3.0-5.9	0.0-0.5	.05	.15			
70009: Goss-----	0-4	5-25	65-80	8-27	1.10-1.30	14.00-42.00	0.12-0.17	0.0-2.9	1.0-12	.20	.37	2	8	0
	4-10	5-20	65-80	10-30	1.10-1.30	14.00-42.00	0.06-0.10	0.0-2.9	0.1-2.0	.10	.55			
	10-16	5-20	40-70	20-40	1.30-1.50	4.00-14.00	0.04-0.09	0.0-2.9	0.0-1.0	.10	.49			
	16-60	2-15	10-40	50-85	1.40-1.60	4.00-14.00	0.06-0.10	3.0-5.9	0.0-0.5	.02	.10			
70010: Goss-----	0-3	5-25	60-80	12-27	1.10-1.30	14.00-42.00	0.06-0.12	0.0-2.9	1.0-12	.10	.32	2	8	0
	3-15	5-20	60-80	10-30	1.10-1.30	14.00-42.00	0.06-0.12	0.0-2.9	0.1-2.0	.10	.43			
	15-21	5-20	50-70	20-50	1.10-1.30	14.00-42.00	0.04-0.10	0.0-2.9	0.0-1.0	.10	.43			
	21-60	5-20	20-50	50-85	1.40-1.60	4.00-14.00	0.06-0.10	3.0-5.9	0.0-0.5	.05	.15			
70011: Goss-----	0-9	5-25	65-80	12-27	1.10-1.30	14.00-42.00	0.06-0.10	0.0-2.9	1.0-4.0	.17	.43	2	8	0
	9-21	5-20	65-80	10-24	1.10-1.30	14.00-42.00	0.06-0.10	0.0-2.9	0.0-2.0	.10	.49			
	21-36	5-25	35-70	35-50	1.30-1.50	4.00-14.00	0.04-0.09	3.0-5.9	0.0-1.0	.05	.24			
	36-60	5-25	20-50	50-80	1.40-1.60	4.00-14.00	0.06-0.10	3.0-5.9	0.0-1.0	.05	.10			
Moko-----	0-7	10-30	50-65	18-27	1.25-1.50	4.00-14.00	0.08-0.13	0.0-2.9	4.0-10	.10	.28	1	8	0
	7-12	10-30	45-65	18-35	1.25-1.60	4.00-14.00	0.03-0.14	0.0-2.9	3.0-8.0	.10	.37			
	12-80	---	---	---	---	0.00-0.01	---	---	---	---	---			
70012: Hoberg-----	0-12	5-15	65-75	15-25	1.30-1.60	4.00-14.00	0.17-0.20	0.0-2.9	1.0-3.0	.32	.37	4	6	48
	12-26	5-15	60-70	20-30	1.50-1.70	4.00-14.00	0.12-0.19	0.0-2.9	0.5-2.0	.32	.43			
	26-42	5-25	55-70	20-30	1.60-1.90	0.42-1.40	0.02-0.06	0.0-2.9	0.2-1.0	.10	.49			
	42-62	5-20	20-40	40-75	1.10-1.40	1.40-4.00	0.02-0.05	3.0-5.9	0.1-0.5	.05	.28			
70014: Moko-----	0-5	20-35	30-65	27-35	1.25-1.50	4.00-14.00	0.08-0.13	0.0-2.9	4.0-10	.10	.28	1	8	0
	5-13	10-30	40-65	18-35	1.25-1.60	4.00-14.00	0.03-0.14	0.0-2.9	3.0-8.0	.10	.37			
	13-80	---	---	---	---	0.00-4.20	---	---	---	---	---			

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind	Wind
													erodi- bility	erodi- bility
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct	Kw	Kf	T	group	index
70014: Rock outcrop.														
70040: Cliquot-----	0-3	45-65	35-50	4-18	1.30-1.50	4.00-14.00	0.14-0.19	0.0-2.9	4.0-8.0	.24	.28	3	5	56
	3-13	30-65	25-60	10-27	1.40-1.55	4.00-14.00	0.07-0.15	0.0-2.9	0.5-3.0	.10	.24			
	13-20	5-20	20-50	50-70	1.30-1.55	0.42-1.40	0.09-0.16	6.0-8.9	0.5-2.0	.15	.20			
	20-31	5-35	15-50	45-60	1.30-1.55	0.42-1.40	0.09-0.16	6.0-8.9	0.2-1.0	.10	.15			
	31-41	5-35	15-55	40-60	1.30-1.55	0.42-1.40	0.09-0.16	3.0-5.9	0.2-0.5	.17	.17			
	41-48	---	---	---	---	0.00-1.40	---	---	---	---	---			
	48-80	---	---	---	---	0.00-0.42	---	---	---	---	---			
Bolivar-----	0-7	45-65	20-45	4-15	1.20-1.40	14.00-42.00	0.10-0.15	0.0-2.9	0.5-3.0	.24	.28	3	5	56
	7-13	45-65	20-45	5-18	1.20-1.40	14.00-42.00	0.10-0.18	0.0-2.9	0.3-1.0	.32	.37			
	13-18	30-60	20-40	8-35	1.30-1.50	4.00-14.00	0.12-0.21	3.0-5.9	0.3-1.0	.32	.32			
	18-26	35-55	20-40	25-40	1.35-1.55	4.00-14.00	0.10-0.18	0.0-2.9	0.1-0.6	.10	.20			
	26-38	---	---	---	---	1.40-4.00	---	---	---	---	---			
	38-80	---	---	---	---	1.40-4.00	---	---	---	---	---			
70041: Goss-----	0-5	5-25	65-80	16-27	1.10-1.30	14.00-42.00	0.06-0.12	0.0-2.9	0.5-4.0	.10	.43	2	8	0
	5-16	5-20	65-80	17-30	1.10-1.30	14.00-42.00	0.06-0.10	0.0-2.9	0.5-2.0	.17	.55			
	16-22	5-20	50-70	27-35	1.10-1.30	14.00-42.00	0.06-0.10	0.0-2.9	0.5-1.0	.20	.55			
	22-30	5-20	20-50	35-60	1.30-1.50	4.00-14.00	0.04-0.09	3.0-5.9	0.0-1.0	.05	.32			
	30-60	1-20	15-50	35-81	1.30-1.50	4.00-14.00	0.04-0.09	3.0-5.9	0.0-1.0	.05	.10			
70042: Goss-----	0-2	15-30	60-80	8-27	1.10-1.30	14.00-42.00	0.06-0.10	0.0-2.9	0.5-7.0	.10	.37	2	8	0
	2-10	10-30	60-80	9-27	1.10-1.30	14.00-42.00	0.06-0.10	0.0-2.9	0.5-2.0	.10	.37			
	10-16	9-30	60-80	18-30	1.10-1.30	14.00-42.00	0.06-0.12	0.0-2.9	0.0-0.5	.10	.43			
	16-55	10-25	35-60	35-60	1.30-1.50	4.00-14.00	0.04-0.09	3.0-5.9	0.0-0.5	.10	.37			
	55-68	10-25	20-50	50-90	1.40-1.60	4.00-14.00	0.06-0.12	3.0-5.9	0.0-0.5	.24	.28			
70043: Sonsac-----	0-3	10-30	60-75	9-27	1.40-1.55	14.00-42.00	0.06-0.12	0.0-2.9	0.5-2.0	.28	.43	3	8	0
	3-6	10-30	60-75	9-27	1.40-1.55	14.00-42.00	0.06-0.17	0.0-2.9	0.5-1.0	.17	.43			
	6-9	10-40	50-70	18-40	1.40-1.55	4.00-14.00	0.06-0.12	3.0-5.9	0.5-1.0	.05	.32			
	9-31	5-30	25-50	50-85	1.20-1.40	4.00-14.00	0.08-0.12	3.0-5.9	0.5-1.0	.05	.37			
	31-80	---	---	---	---	0.00-4.00	---	---	---	---	---			
Moko-----	0-5	10-20	45-65	18-35	1.25-1.50	4.00-14.00	0.08-0.13	0.0-2.9	4.0-10	.10	.28	1	8	0
	5-12	10-30	45-65	18-35	1.25-1.60	4.00-14.00	0.03-0.14	0.0-2.9	3.0-8.0	.10	.37			
	12-80	---	---	---	---	0.00-4.00	---	---	---	---	---			
Rock outcrop.														

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
70044: Sonsac-----	0-4	5-30	60-75	9-27	1.10-1.40	14.00-42.00	0.12-0.17	0.0-2.9	0.5-3.0	.28	.43	3	8	0
	4-13	5-30	60-75	9-27	1.10-1.40	14.00-42.00	0.06-0.14	0.0-2.9	0.5-1.0	.17	.43			
	13-22	10-40	50-70	18-40	1.10-1.40	14.00-42.00	0.07-0.14	3.0-5.9	0.5-1.0	.05	.32			
	22-37	5-30	25-50	50-85	1.30-1.50	4.00-14.00	0.08-0.12	3.0-5.9	0.5-1.0	.05	.15			
	37-80	---	---	---	---	0.00-4.00	---	---	---	---	---			
Moko-----	0-6	5-30	50-65	18-27	1.25-1.50	4.00-14.00	0.12-0.15	0.0-2.9	4.0-10	.15	.24	1	8	0
	6-14	10-30	45-65	18-35	1.25-1.60	4.00-14.00	0.03-0.14	0.0-2.9	2.0-8.0	.05	.20			
	14-80	---	---	---	---	0.00-4.00	---	---	---	---	---			
70047: Wanda-----	0-15	15-35	50-70	15-27	1.30-1.45	4.00-14.00	0.18-0.20	0.0-2.9	1.0-4.0	.37	.37	4	6	48
	15-26	15-20	40-65	27-35	1.40-1.55	4.00-14.00	0.15-0.19	3.0-5.9	1.0-3.0	.32	.37			
	26-44	10-20	40-60	27-35	1.40-1.55	4.00-14.00	0.15-0.19	3.0-5.9	0.5-2.0	.24	.32			
	44-60	10-20	40-60	27-45	1.40-1.55	4.00-14.00	0.06-0.18	3.0-5.9	0.2-0.8	.20	.32			
70048: Alsup-----	0-5	5-30	50-80	12-20	1.20-1.50	4.00-14.00	0.16-0.19	0.0-2.9	0.5-6.0	.43	.49	4	6	48
	5-14	5-30	40-75	12-20	1.20-1.50	4.00-14.00	0.12-0.18	0.0-2.9	0.5-2.0	.43	.55			
	14-24	5-30	45-70	18-27	1.30-1.50	4.00-14.00	0.08-0.19	3.0-5.9	0.5-2.0	.28	.49			
	24-50	1-20	30-60	35-55	1.30-1.50	1.40-4.00	0.12-0.19	6.0-8.9	0.1-1.0	.24	.24			
	50-60	---	---	---	---	0.00-1.40	---	---	---	---	---			
70052: Arnica-----	0-6	25-50	35-50	11-27	1.20-1.45	4.00-14.00	0.16-0.22	0.0-2.9	2.0-6.0	.24	.24	5	5	56
	6-14	20-50	25-60	18-35	1.40-1.60	4.00-14.00	0.16-0.20	3.0-5.9	0.5-2.0	.32	.32			
	14-23	20-45	35-50	18-35	1.40-1.60	4.00-14.00	0.16-0.20	3.0-5.9	0.1-1.0	.37	.37			
	23-80	20-45	35-50	18-35	1.45-1.60	4.00-14.00	0.16-0.20	3.0-5.9	0.1-0.5	.37	.37			
70053: Courtois-----	0-4	10-25	50-75	10-27	1.20-1.40	14.00-42.00	0.17-0.21	0.0-2.9	1.0-3.0	.28	.32	4	5	56
	4-30	5-20	40-70	20-45	1.25-1.55	4.00-14.00	0.12-0.19	3.0-5.9	0.5-1.0	.28	.32			
	30-49	5-25	20-40	40-60	1.40-1.60	4.00-14.00	0.04-0.12	6.0-8.9	0.1-1.0	.02	.15			
	49-80	3-20	10-30	45-90	1.30-1.60	4.00-14.00	0.09-0.14	6.0-8.9	0.0-0.5	.05	.10			
70054: Cliquot-----	0-4	40-50	35-50	8-18	1.30-1.50	4.00-14.00	0.11-0.15	0.0-2.9	4.0-8.0	.15	.32	4	8	0
	4-10	30-60	25-60	15-27	1.40-1.55	4.00-14.00	0.08-0.14	0.0-2.9	0.5-1.0	.15	.49			
	10-41	5-20	20-50	45-70	1.30-1.55	0.42-1.40	0.07-0.16	6.0-8.9	0.5-1.0	.17	.20			
	41-48	5-20	20-50	40-60	1.30-1.55	0.42-1.40	0.07-0.12	6.0-8.9	0.2-0.5	.15	.28			
	48-55	5-20	20-50	40-60	1.30-1.55	0.42-1.40	0.09-0.15	6.0-8.9	0.2-0.5	.10	.32			
	55-80	---	---	---	---	0.00-1.40	---	---	---	---	---			

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
71254: Cotter-----	0-10	3-10	65-80	18-27	1.35-1.45	4.00-14.00	0.19-0.22	3.0-5.9	2.0-4.0	.37	.37	5	6	48
	10-33	1-5	60-75	20-35	1.25-1.40	4.00-14.00	0.19-0.22	3.0-5.9	0.5-1.0	.43	.43			
	33-80	1-5	60-70	27-35	1.25-1.40	4.00-14.00	0.17-0.20	3.0-5.9	0.5-1.0	.43	.43			
71750: Cleora-----	0-12	50-70	20-35	5-18	1.30-1.60	14.00-42.00	0.14-0.17	0.0-2.9	1.0-3.0	.28	.28	5	3	86
	12-22	50-70	20-35	5-18	1.30-1.60	14.00-42.00	0.12-0.15	0.0-2.9	0.5-1.0	.32	.32			
	22-80	35-70	20-45	5-18	1.40-1.70	14.00-42.00	0.12-0.18	0.0-2.9	0.5-1.0	.43	.43			
73000: Pomme-----	0-7	5-30	50-75	15-25	1.35-1.45	4.00-14.00	0.16-0.21	0.0-2.9	1.0-2.0	.32	.37	5	5	56
	7-19	5-25	45-65	22-35	1.30-1.45	4.00-14.00	0.14-0.21	0.0-2.9	0.2-1.0	.32	.37			
	19-57	5-20	40-60	27-40	1.30-1.45	4.00-14.00	0.08-0.14	0.0-2.9	0.1-0.5	.28	.32			
	57-86	4-20	15-35	45-75	1.25-1.40	4.00-14.00	0.04-0.10	3.0-5.9	0.1-0.5	.05	.10			
73003: Ocie-----	0-2	10-30	50-75	10-20	1.10-1.40	4.00-14.00	0.08-0.17	0.0-2.9	2.0-12	.10	.37	3	8	0
	2-14	10-30	45-70	9-20	1.10-1.35	4.00-14.00	0.07-0.15	0.0-2.9	0.5-2.0	.10	.55			
	14-19	5-25	45-60	15-34	1.10-1.35	4.00-14.00	0.11-0.15	0.0-2.9	0.1-1.0	.15	.37			
	19-44	3-20	20-50	50-85	1.10-1.30	0.42-1.40	0.07-0.14	6.0-8.9	0.1-1.0	.10	.15			
	44-80	---	---	---	---	0.00-0.01	---	---	---	---	---			
Gatewood-----	0-4	10-30	50-75	6-25	1.10-1.40	4.00-14.00	0.12-0.17	0.0-2.9	2.0-8.0	.20	.43	2	8	0
	4-7	10-30	50-70	15-25	1.10-1.40	4.00-14.00	0.12-0.17	0.0-2.9	0.5-2.0	.15	.37			
	7-28	5-20	25-50	55-85	1.10-1.30	0.42-1.40	0.09-0.12	6.0-8.9	0.5-1.7	.15	.20			
	28-80	---	---	---	---	0.00-0.01	---	---	---	---	---			
73005: Ocie-----	0-4	10-30	50-75	10-20	1.10-1.40	4.00-14.00	0.12-0.17	0.0-2.9	2.0-12	.15	.37	3	8	0
	4-10	10-30	45-70	13-20	1.10-1.35	4.00-14.00	0.11-0.15	0.0-2.9	0.5-2.0	.17	.49			
	10-19	5-30	45-60	15-27	1.10-1.35	4.00-14.00	0.11-0.15	0.0-2.9	0.1-1.0	.20	.49			
	19-52	5-20	20-50	50-85	1.10-1.30	0.42-1.40	0.07-0.14	6.0-8.9	0.1-1.0	.10	.20			
	52-60	---	---	---	---	0.01-0.42	---	---	---	---	---			
73007: Plato-----	0-5	5-15	50-80	10-20	1.20-1.50	4.00-14.00	0.17-0.20	0.0-2.9	1.0-4.0	.55	.55	4	5	56
	5-9	5-20	50-80	10-20	1.20-1.50	4.00-14.00	0.17-0.20	0.0-2.9	0.2-1.0	.55	.55			
	9-29	2-15	35-60	27-55	1.30-1.50	1.40-4.00	0.10-0.18	6.0-8.9	0.2-1.0	.28	.28			
	29-60	5-20	50-70	20-40	1.60-1.90	0.01-0.42	0.01-0.05	3.0-5.9	0.0-0.5	.49	.49			

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
73008:														
Viraton-----	0-6	5-25	60-80	8-25	1.30-1.50	4.00-14.00	0.18-0.22	0.0-2.9	0.5-5.0	.43	.43	4	6	48
	6-21	5-25	50-75	18-35	1.30-1.50	4.00-14.00	0.08-0.20	0.0-2.9	0.5-1.0	.37	.43			
	21-30	5-30	40-65	18-30	1.60-1.90	0.01-0.42	0.01-0.05	0.0-2.9	0.0-0.5	.17	.43			
	30-60	5-25	20-60	27-70	1.10-1.40	1.40-4.00	0.02-0.06	3.0-5.9	0.0-0.5	.10	.15			
73059:														
Pomme-----	0-8	5-35	50-75	15-25	1.35-1.45	4.00-14.00	0.16-0.21	0.0-2.9	1.0-2.0	.37	.37	5	5	56
	8-26	5-35	45-65	20-35	1.30-1.45	4.00-14.00	0.14-0.21	0.0-2.9	0.2-1.5	.37	.37			
	26-44	5-35	40-60	21-40	1.30-1.45	4.00-14.00	0.08-0.14	0.0-2.9	0.1-1.0	.17	.32			
	44-72	5-20	15-35	45-75	1.25-1.40	4.00-14.00	0.04-0.14	3.0-5.9	0.1-1.0	.10	.15			
73075:														
Hobson-----	0-4	30-50	30-50	7-27	1.20-1.40	4.00-14.00	0.20-0.24	0.0-2.9	0.5-3.0	.37	.37	4	6	48
	4-8	40-50	30-50	9-27	1.20-1.40	4.00-14.00	0.20-0.24	0.0-2.9	0.5-2.0	.37	.37			
	8-19	25-50	25-50	24-35	1.25-1.45	4.00-14.00	0.14-0.18	3.0-5.9	0.5-1.0	.37	.37			
	19-40	20-50	20-50	18-32	1.60-1.90	0.42-1.40	0.07-0.11	0.0-2.9	0.2-0.5	.37	.37			
	40-72	20-50	20-50	20-36	1.20-1.40	1.40-4.00	0.06-0.11	0.0-2.9	0.2-0.5	.28	.37			
74625:														
Hartville-----	0-6	5-15	60-80	20-27	1.10-1.30	4.00-14.00	0.19-0.22	0.0-2.9	1.0-3.0	.37	.37	5	6	48
	6-10	5-15	50-70	24-40	1.20-1.40	0.42-1.40	0.18-0.21	3.0-5.9	0.5-2.0	.37	.43			
	10-31	4-15	50-70	35-60	1.20-1.50	0.42-1.40	0.12-0.20	3.0-5.9	0.5-1.0	.28	.32			
	31-60	4-15	30-60	35-60	1.20-1.50	0.42-1.40	0.12-0.20	6.0-8.9	0.0-0.5	.32	.37			
74641:														
Secesh-----	0-8	20-40	50-70	15-25	1.10-1.30	4.00-14.00	0.18-0.21	0.0-2.9	1.0-2.0	.32	.37	4	5	56
	8-14	20-40	40-60	20-30	1.20-1.40	4.00-14.00	0.16-0.19	0.0-2.9	0.5-1.0	.32	.43			
	14-24	20-40	40-60	25-35	1.20-1.40	4.00-14.00	0.12-0.19	0.0-2.9	0.5-1.0	.32	.37			
	24-60	20-40	40-60	27-35	1.30-1.50	4.00-14.00	0.10-0.19	0.0-2.9	0.5-1.0	.20	.32			
75375:														
Horsecreek-----	0-9	0-5	75-85	10-25	1.20-1.40	4.00-14.00	0.18-0.23	0.0-2.9	2.0-4.0	.43	.43	5	5	56
	9-18	0-5	75-85	10-25	1.20-1.40	4.00-14.00	0.18-0.23	0.0-2.9	1.0-2.0	.55	.55			
	18-60	0-5	70-80	18-34	1.20-1.50	4.00-14.00	0.16-0.23	0.0-2.9	0.5-2.0	.49	.49			
75377:														
Racket-----	0-10	15-35	50-65	15-27	1.25-1.45	4.00-14.00	0.18-0.24	0.0-2.9	1.0-4.0	.28	.32	5	6	48
	10-24	20-50	30-60	15-27	1.25-1.45	4.00-14.00	0.18-0.24	0.0-2.9	1.0-4.0	.17	.20			
	24-38	10-50	30-60	15-30	1.25-1.45	4.00-14.00	0.16-0.20	3.0-5.9	1.0-3.0	.28	.37			
	38-60	50-90	10-30	5-18	1.35-1.55	42.00-141.00	0.02-0.08	0.0-2.9	0.5-2.0	.10	.20			
75378:														
Sturkie-----	0-9	5-15	60-75	15-25	1.30-1.40	4.00-14.00	0.20-0.24	0.0-2.9	2.0-4.0	.37	.37	5	5	56
	9-19	5-15	60-70	18-30	1.30-1.40	4.00-14.00	0.20-0.22	0.0-2.9	1.0-3.0	.43	.43			
	19-60	10-30	45-60	18-30	1.35-1.45	4.00-14.00	0.18-0.20	0.0-2.9	0.5-2.0	.37	.37			

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
99000. Pits, quarries	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
99001. Water														
99004: Kanima-----	0-8	20-40	50-70	18-27	1.30-1.60	4.00-14.00	0.08-0.17	0.0-2.9	0.5-2.0	.17	.32	2	7	38
	8-60	20-40	40-60	18-35	1.40-1.70	4.00-14.00	0.02-0.12	0.0-2.9	0.0-1.0	.15	.32			
99007. Dam														

Table 20.--Chemical Properties of the Soils

(Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction
	In	meq/100 g	meq/100 g	pH
40000:				
Barden-----	0-8	8.0-18	8.0-18	5.1-7.3
	8-23	19-30	19-30	4.5-7.3
	23-68	14-20	14-20	4.5-7.3
	68-74	---	---	---
40001:				
Bolivar-----	0-9	4.0-10	4.0-10	5.1-6.5
	9-25	6.0-15	4.0-15	4.5-6.5
	25-38	6.0-15	4.0-15	4.5-6.0
	38-42	---	---	---
	42-80	---	---	---
40004:				
Barden-----	0-7	5.0-20	5.0-15	5.1-7.3
	7-16	5.0-20	5.0-15	5.1-7.3
	16-65	15-25	10-20	4.5-7.3
	65-80	10-20	10-20	4.5-7.3
40005:				
Sylvania-----	0-6	20-26	5.0-15	4.5-5.5
	6-11	12-18	5.0-15	4.5-5.5
	11-15	9.0-18	5.0-20	4.5-5.5
	15-45	20-25	15-25	4.5-5.5
	45-55	---	---	---
40006:				
Barco-----	0-7	8.0-15	5.0-18	5.1-7.3
	7-14	5.0-15	5.0-18	4.5-5.5
	14-23	10-20	2.0-18	4.5-5.5
	23-31	10-20	6.0-20	4.5-5.5
	31-39	---	---	---
	39-80	---	---	---
Sylvania-----	0-10	10-25	5.0-20	4.5-5.5
	10-16	5.0-20	5.0-20	4.5-5.5
	16-32	10-25	10-25	4.5-5.5
	32-49	5.0-15	5.0-15	4.5-5.5
	49-60	---	---	---
40007:				
Eldorado-----	0-8	11-25	11-25	5.6-6.5
	8-13	11-25	11-25	5.6-6.5
	13-33	11-25	11-25	5.6-6.5
	33-60	20-50	20-50	5.6-6.5
40008:				
Parsons-----	0-8	9.0-20	9.0-15	5.1-6.5
	8-16	9.0-15	5.0-15	5.1-6.5
	16-31	20-35	20-30	5.1-6.5
	31-60	15-25	10-20	5.1-6.5
40009:				
Sylvania-----	0-7	12-20	8.0-15	4.5-6.5
	7-10	12-20	8.0-15	4.5-5.5
	10-28	15-25	10-20	4.5-5.5
	28-42	15-25	10-20	4.5-5.5
	42-52	---	---	---

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction
	In	meq/100 g	meq/100 g	pH
40010:				
Collinsville-----	0-6	5.0-13	5.0-13	4.5-7.8
	6-15	4.0-13	4.0-13	4.5-7.3
	15-80	---	---	---
Rock outcrop.				
44001:				
Quarles-----	0-8	5.0-15	5.0-10	5.1-6.0
	8-25	5.0-15	5.0-10	4.5-5.5
	25-80	10-20	10-15	4.5-6.5
46000:				
Humansville-----	0-7	20-30	20-30	5.1-7.3
	7-24	20-30	20-30	6.1-7.3
	24-60	20-30	20-30	6.1-7.3
66000:				
Moniteau-----	0-6	10-14	7.0-12	5.1-6.5
	6-18	6.0-12	4.0-10	5.1-6.5
	18-60	12-20	10-18	4.5-6.0
66001:				
Dameron-----	0-9	12-25	12-20	5.1-7.3
	9-15	12-25	12-20	5.1-7.3
	15-24	15-25	12-20	5.6-7.3
	24-72	12-25	15-25	5.1-7.3
	72-80	12-25	12-25	5.1-7.3
70000:				
Bona-----	0-6	10-18	8.0-18	5.1-6.5
	6-18	10-18	8.0-18	5.1-6.5
	18-24	8.0-16	6.0-16	5.1-6.5
	24-30	10-20	8.0-18	4.5-6.5
	30-72	15-30	12-25	4.5-6.5
	72-80	---	---	---
70001:				
Bona-----	0-7	10-25	8.0-18	5.1-6.5
	7-12	10-21	8.0-18	5.1-6.5
	12-19	8.0-24	6.0-16	5.1-6.5
	19-45	10-37	8.0-18	4.5-6.5
	45-62	15-44	12-25	4.5-7.3
	62-80	---	---	---
70002:				
Alsup-----	0-4	6.0-35	2.0-40	5.1-7.3
	4-13	3.0-12	2.0-12	4.5-7.3
	13-23	15-30	18-30	4.5-6.0
	23-39	9.0-25	18-31	4.5-6.0
	39-44	9.0-20	9.0-20	5.1-7.3
	44-60	---	---	---
70003:				
Alsup-----	0-7	6.0-16	2.0-8.0	5.1-7.3
	7-12	3.0-12	2.0-8.0	5.1-7.3
	12-40	20-30	18-30	4.5-6.0
	40-56	9.0-20	9.0-20	6.5-7.3
	56-66	---	---	---

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction
	In	meq/100 g	meq/100 g	pH
70004: Alsup-----	0-4	6.0-18	2.0-23	5.1-7.3
	4-9	3.0-12	2.0-8.0	5.1-7.3
	9-20	13-30	16-30	4.5-6.0
	20-41	8.6-20	9.0-20	4.5-7.3
	41-46	---	---	---
70006: Crelton-----	0-8	12-18	10-18	4.5-7.3
	8-27	15-24	12-24	4.5-6.5
	27-37	9.0-15	6.0-14	3.5-5.5
	37-60	25-40	20-40	4.5-6.5
70007: Cliquot-----	0-5	8.0-20	5.0-15	4.5-6.0
	5-26	5.0-10	2.0-10	4.5-6.0
	26-49	15-25	10-20	4.5-5.5
	49-55	15-25	10-20	4.5-5.5
	55-63	---	---	---
	63-80	---	---	---
70008: Goss-----	0-6	10-31	10-31	4.5-6.5
	6-10	6.0-12	3.7-12	4.5-6.5
	10-14	9.0-25	7.0-25	4.5-7.3
	14-80	25-58	21-58	4.5-7.3
70009: Goss-----	0-4	10-31	10-36	4.5-6.5
	4-10	6.0-12	3.7-12	4.5-6.5
	10-16	9.0-25	7.0-25	4.5-7.3
	16-60	25-58	21-58	4.5-7.3
70010: Goss-----	0-3	10-31	10-42	4.5-6.5
	3-15	6.0-12	3.7-13	4.5-6.5
	15-21	7.8-25	7.0-25	4.5-7.3
	21-60	25-58	21-58	4.5-7.3
70011: Goss-----	0-9	10-31	10-31	4.5-6.5
	9-21	6.0-12	3.7-12	4.5-6.5
	21-36	16-24	7.0-25	4.5-7.3
	36-60	25-58	21-58	4.5-7.3
Moko-----	0-7	15-30	15-30	6.6-7.8
	7-12	15-30	15-30	6.6-7.8
	12-80	---	---	---
70012: Hoberg-----	0-12	11-18	5.0-13	5.1-7.3
	12-26	11-18	5.0-13	5.1-6.5
	26-42	11-18	5.0-13	3.5-6.0
	42-62	15-25	14-36	3.5-6.0
70014: Moko-----	0-5	15-30	15-30	6.6-7.8
	5-13	15-30	15-30	6.6-7.8
	13-80	---	---	---
Rock outcrop.				

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction
	In	meq/100 g	meq/100 g	pH
70040: Cliquot-----	0-3	8.0-30	5.0-15	4.5-6.0
	3-13	5.0-10	2.0-10	4.5-6.0
	13-20	15-32	10-26	4.5-5.5
	20-31	15-28	10-24	4.5-5.5
	31-41	15-34	5.0-30	4.5-5.5
	41-48	---	---	---
	48-80	---	---	---
Bolivar-----	0-7	4.0-16	2.0-10	5.1-6.0
	7-13	3.0-12	2.0-10	5.1-6.5
	13-18	10-20	5.0-15	4.5-6.0
	18-26	10-20	10-20	4.5-6.0
	26-38	---	---	---
	38-80	---	---	---
70041: Goss-----	0-5	10-15	10-15	4.5-6.5
	5-16	5.0-15	5.0-15	4.5-7.3
	16-22	9.0-15	9.0-15	4.5-7.3
	22-30	15-25	10-25	4.5-7.3
	30-60	30-40	20-30	4.5-7.3
70042: Goss-----	0-2	5.0-15	5.0-10	4.5-6.5
	2-10	3.0-10	2.0-10	4.5-6.5
	10-16	5.0-10	3.0-10	4.5-6.0
	16-55	10-20	10-15	4.5-6.0
	55-68	15-30	15-25	4.5-7.3
70043: Sonsac-----	0-3	8.0-20	8.0-20	5.1-6.5
	3-6	3.0-10	3.0-10	5.1-6.5
	6-9	20-30	20-30	5.1-6.5
	9-31	25-45	25-45	5.1-7.3
	31-80	---	---	---
Moko-----	0-5	15-30	15-30	6.6-7.8
	5-12	15-30	15-30	6.6-7.8
	12-80	---	---	---
Rock outcrop.				
70044: Sonsac-----	0-4	5.0-20	5.0-20	5.1-6.5
	4-13	3.0-10	3.0-10	5.1-6.5
	13-22	10-30	10-30	5.1-6.5
	22-37	25-45	25-45	5.1-6.5
	37-80	---	---	---
Moko-----	0-6	15-30	15-30	6.6-7.8
	6-14	15-30	15-30	6.6-7.8
	14-80	---	---	---
70047: Wanda-----	0-15	10-16	10-16	5.6-7.3
	15-26	12-16	12-16	5.6-7.3
	26-44	12-16	12-16	5.1-6.5
	44-60	12-16	12-16	5.1-6.5

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction
	In	meq/100 g	meq/100 g	pH
70048: Alsup-----	0-5	10-20	10-20	5.1-7.3
	5-14	5.0-20	5.0-15	5.1-7.3
	14-24	5.0-20	5.0-15	5.1-6.0
	24-50	10-25	10-25	4.5-6.0
	50-60	---	---	---
70052: Arnica-----	0-6	5.0-12	4.0-10	5.1-7.3
	6-14	8.0-18	5.0-10	4.5-7.3
	14-23	8.0-20	5.0-10	4.5-7.3
	23-80	10-22	10-15	4.5-7.3
70053: Courtois-----	0-4	5.0-15	5.0-15	5.1-7.3
	4-30	10-20	10-20	5.1-7.3
	30-49	10-25	10-25	5.1-7.3
	49-80	20-40	20-40	5.1-7.3
70054: Cliquot-----	0-4	8.0-16	5.0-15	4.5-6.0
	4-10	5.0-10	2.0-10	4.5-6.0
	10-41	15-25	10-20	4.5-5.5
	41-48	15-25	10-20	4.5-5.5
	48-55	15-25	5.0-20	4.5-5.5
	55-80	---	---	---
71254: Cotter-----	0-10	10-16	10-16	5.6-7.3
	10-33	12-20	12-20	5.1-7.3
	33-80	12-20	12-20	5.1-7.3
71750: Cleora-----	0-12	3.0-10	3.0-6.2	5.6-7.3
	12-22	3.0-10	3.0-5.7	5.6-7.3
	22-80	3.0-15	3.0-7.1	5.6-7.3
73000: Pomme-----	0-7	5.0-12	5.0-10	5.6-7.3
	7-19	8.0-16	5.0-15	5.6-7.3
	19-57	8.0-16	5.0-15	5.1-7.3
	57-86	10-30	10-25	4.5-7.3
73003: Ocie-----	0-2	10-25	7.0-20	4.5-6.5
	2-14	3.0-8.0	2.0-6.0	4.5-6.0
	14-19	6.0-12	4.0-10	4.5-6.0
	19-44	15-40	15-35	4.5-7.3
	44-80	---	---	---
Gatewood-----	0-4	10-18	8.0-18	5.1-7.3
	4-7	5.0-15	4.0-15	5.1-7.3
	7-28	20-35	16-35	4.5-7.3
	28-80	---	---	---
73005: Ocie-----	0-4	10-25	8.0-20	4.5-7.3
	4-10	5.0-8.0	4.0-8.0	4.5-6.5
	10-19	6.0-12	4.0-12	4.5-6.0
	19-52	15-40	12-40	5.1-7.3
	52-60	---	---	---

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction
	In	meq/100 g	meq/100 g	pH
73007: Plato-----	0-5	8.0-20	5.0-15	4.5-7.3
	5-9	10-20	5.0-15	4.5-6.0
	9-29	20-35	15-30	3.5-5.5
	29-60	10-25	5.0-20	3.5-5.5
73008: Viraton-----	0-6	6.0-20	3.0-20	4.5-7.3
	6-21	8.0-15	6.0-18	4.5-6.0
	21-30	8.0-15	6.0-16	3.5-5.5
	30-60	15-30	10-20	4.5-7.3
73059: Pomme-----	0-8	5.0-15	5.0-15	5.6-7.3
	8-26	5.0-15	5.0-15	5.6-7.3
	26-44	5.0-15	5.0-15	5.1-7.3
	44-72	20-30	20-30	4.5-7.3
73075: Hobson-----	0-4	6.0-15	4.0-12	4.5-6.0
	4-8	6.0-15	4.0-12	4.5-6.0
	8-19	8.0-15	8.0-12	4.5-6.0
	19-40	8.0-15	8.0-12	4.5-5.5
	40-72	8.0-15	8.0-12	4.5-5.5
74625: Hartville-----	0-6	10-18	10-16	4.5-7.3
	6-10	12-20	12-20	4.5-7.3
	10-31	15-30	15-30	4.5-7.3
	31-60	18-30	18-30	6.1-7.3
74641: Secesh-----	0-8	8.0-15	8.0-15	5.6-6.5
	8-14	8.0-15	8.0-15	5.1-6.5
	14-24	8.0-15	8.0-15	5.1-6.0
	24-60	8.0-15	8.0-15	5.1-6.0
75375: Horsecreek-----	0-9	10-15	8.0-15	5.6-7.3
	9-18	10-15	8.0-15	5.6-7.3
	18-60	10-15	8.0-15	5.1-7.3
75377: Racket-----	0-10	10-20	10-20	6.1-7.3
	10-24	10-20	10-20	6.1-7.3
	24-38	10-20	10-20	6.1-7.3
	38-60	10-20	10-20	6.1-7.3
75378: Sturkie-----	0-9	12-25	12-25	5.6-7.3
	9-19	12-25	12-25	5.6-7.3
	19-60	12-25	12-25	6.1-7.3
99000. Pits, quarries				
99001. Water				

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction
	In	meq/100 g	meq/100 g	pH
99004: Kanima-----	0-8	16-21	---	5.6-8.4
	8-60	11-21	---	5.6-8.4
99007. Dam				

Table 21.--Water Features

(Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Map symbol and soil name	Hydro- logic group	Flooding			High water table		
		Frequency	Duration	Months	Depth Ft	Kind	Months
40000: Barden-----	C	None-----	---	---	2.0-3.0	Perched	Nov-Mar
40001: Bolivar-----	B	None-----	---	---	>6.0	---	---
40004: Barden-----	C	None-----	---	---	2.0-3.0	Perched	Nov-Mar
40005: Sylvania-----	C	None-----	---	---	2.5-4.0	Perched	Dec-Mar
40006: Barco-----	B	None-----	---	---	>6	---	---
Sylvania-----	C	None-----	---	---	2.5-4.0	Perched	Dec-Mar
40007: Eldorado-----	B	None-----	---	---	>6.0	---	---
40008: Parsons-----	D	None-----	---	---	0.5-1.5	Perched	Dec-Apr
40009: Sylvania-----	C	None-----	---	---	2.5-4.0	Perched	Dec-Mar
40010: Collinsville----	D	None-----	---	---	>6.0	---	---
Rock outcrop.							
44001: Quarles-----	D	Rare-----	Brief-----	Mar-Jun	1.0-1.5	Apparent	Nov-May
46000: Humansville-----	D	Frequent----	Very brief	Dec-Apr	0.5-1.0	Apparent	Dec-Apr
66000: Moniteau-----	C	Occasional--	Very brief	Nov-May	0-1.0	Apparent	Nov-May
66001: Dameron-----	B	Frequent----	Very brief	Dec-May	>6.0	---	---
70000: Bona-----	B	None-----	---	---	>6.0	---	---
70001: Bona-----	B	None-----	---	---	>6.0	---	---
70002, 70003, 70004: Alsup-----	C	None-----	---	---	2.5-4.0	Perched	Dec-Mar
70006: Crelton-----	C	None-----	---	---	1.5-3.0	Perched	Dec-Apr
70007: Cliquot-----	C	None-----	---	---	3.5-4.5	Perched	Dec-Mar

Table 21.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
70008, 70009, 70010: Goss-----	B	None-----	---	---	>6.0	---	---
70011: Goss-----	B	None-----	---	---	>6.0	---	---
Moko-----	D	None-----	---	---	>6.0	---	---
70012: Hoberg-----	C	None-----	---	---	1.0-3.0	Perched	Dec-Mar
70014: Moko-----	D	None-----	---	---	>6.0	---	---
Rock outcrop.							
70040: Cliquot-----	C	None-----	---	---	3.5-4.5	Perched	Dec-Mar
Bolivar-----	B	None-----	---	---	>6.0	---	---
700041, 70042: Goss-----	B	None-----	---	---	>6.0	---	---
70043: Sonsac-----	B	None-----	---	---	>6.0	---	---
Moko-----	D	None-----	---	---	>6.0	---	---
Rock outcrop.							
70044: Sonsac-----	B	None-----	---	---	>6.0	---	---
Moko-----	D	None-----	---	---	>6.0	---	---
70047: Wanda-----	B	None-----	---	---	>6.0	---	---
70048: Alsup-----	C	None-----	---	---	2.5-4.0	Perched	Dec-Mar
70052: Arnica-----	B	None-----	---	---	2.0-3.5	Perched	Dec-Apr
70053: Courtois-----	B	None-----	---	---	>6.0	---	---
70054: Cliquot-----	C	None-----	---	---	3.5-4.5	Perched	Dec-Mar
71254: Cotter-----	B	Rare-----	Brief-----	Mar-Jun	>6.0	---	---
71750: Cleora-----	B	Frequent----	Very brief	Jan-Jul	>6.0	---	---
73000: Pomme-----	B	None-----	---	---	>6.0	---	---

Table 21.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Flooding			High water table		
		Frequency	Duration	Months	Depth Ft	Kind	Months
73003: Ocie-----	C	None-----	---	---	2.0-5.0	Perched	Feb-Mar
Gatewood-----	C	None-----	---	---	1.5-3.0	Perched	Jan-Apr
73005: Ocie-----	C	None-----	---	---	2.0-5.0	Perched	Feb-Mar
73007: Plato-----	C	None-----	---	---	1.0-2.0	Perched	Dec-Apr
73008: Viraton-----	C	None-----	---	---	1.5-2.5	Perched	Dec-May
73059: Pomme-----	B	None-----	---	---	>6.0	---	---
73075: Hobson-----	C	None-----	---	---	1.5-3.0	Perched	Dec-May
74625: Hartville-----	C	None-----	---	---	1.5-3.0	Perched	Jan-Apr
74641: Secesh-----	B	Occasional--	Very brief	Nov-Apr	>6.0	---	---
75375: Horsecreek-----	B	Occasional--	Very brief	Nov-May	>6.0	---	---
75377: Racket-----	B	Frequent----	Very brief	Nov-Apr	>6.0	---	---
75378: Sturkie-----	B	Frequent----	Brief-----	Dec-Apr	>6.0	---	---
99000. Pits, quarries							
99001. Water							
99004: Kanima-----	C	None-----	---	---	>6.0	---	---
99007. Dam							

Table 22.--Soil Features

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	In				
40000: Barden-----	---	---	---	---	None	High	Moderate
40001: Bolivar-----	Bedrock (paralithic)	20-40	0-8	Strongly cemented	None	Low	Moderate
	Bedrock (lithic)	30-60	---	Very strongly cemented			
40004: Barden-----	---	---	---	---	None	High	Moderate
40005: Sylvania-----	Bedrock (paralithic)	40-60	6-40	Moderately cemented	None	Low	Moderate
40006: Barco-----	Bedrock (paralithic)	20-40	2-60	Moderately cemented	None	Low	Moderate
	Sylvania-----	Bedrock (paralithic)	40-60	4-40	Moderately cemented	Moderate	High
40007: Eldorado-----	---	---	---	---	None	High	Moderate
40008: Parsons-----	---	---	---	---	None	High	Moderate
40009: Sylvania-----	Bedrock (paralithic)	40-60	---	---	None	Low	Moderate
40010: Collinsville-----	Bedrock (lithic)	4-20	---	Very strongly cemented	None	Low	Moderate
Rock outcrop-----	Bedrock (lithic)	0	60-80	Indurated	---	---	---
44001: Quarles-----	---	---	---	---	None	High	Moderate
46000: Humansville-----	---	---	---	---	None	High	Low
66000: Moniteau-----	---	---	---	---	High	High	High
66001: Dameron-----	---	---	---	---	Moderate	Low	Low
70000: Bona-----	Bedrock (lithic)	60-80	---	Indurated	Moderate	High	Moderate
70001: Bona-----	Bedrock (lithic)	60-80	---	Indurated	Moderate	High	Moderate

Table 22.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	In				
70002: Alsup-----	Bedrock (paralithic)	40-60	---	Weakly cemented	Moderate	High	Moderate
70003: Alsup-----	Bedrock (paralithic)	40-60	---	Weakly cemented	Moderate	High	Moderate
70004: Alsup-----	Bedrock (paralithic)	40-60	---	Weakly cemented	Moderate	High	Moderate
70006: Credon-----	Fragipan	18-35	6-30	Noncemented	Moderate	High	High
70007: Cliquot-----	Bedrock (paralithic)	40-60	4-40	Moderately cemented	Moderate	High	High
70008: Goss-----	---	---	---	---	Moderate	Moderate	Moderate
70009: Goss-----	---	---	---	---	Moderate	Moderate	Moderate
70010: Goss-----	---	---	---	---	Moderate	Moderate	Moderate
70011: Goss-----	---	---	---	---	Moderate	Moderate	Moderate
Moko-----	Bedrock (lithic)	4-20	---	Indurated	None	Low	Low
70012: Hoberg-----	Fragipan	20-36	11-35	Noncemented	Moderate	Moderate	High
70014: Moko-----	Bedrock (lithic)	4-20	60-76	Indurated	None	Low	Low
Rock outcrop-----	Bedrock (lithic)	0	---	Indurated	---	---	---
70040: Cliquot-----	Bedrock (paralithic)	40-60	4-40	Moderately cemented	Moderate	High	High
Bolivar-----	Bedrock (paralithic)	20-40	10-20	Moderately cemented	None	Low	Moderate
70041: Goss-----	---	---	---	---	Moderate	Moderate	Moderate
70042: Goss-----	---	---	---	---	Moderate	Moderate	Moderate
70043: Sonsac-----	Bedrock (lithic)	20-40	40-60	Indurated	Moderate	Moderate	Moderate
Moko-----	Bedrock (lithic)	4-20	60-76	Indurated	None	Low	Low
Rock outcrop-----	Bedrock (lithic)	0	60-80	Indurated	---	---	---

Table 22.--Soil Features--Continued

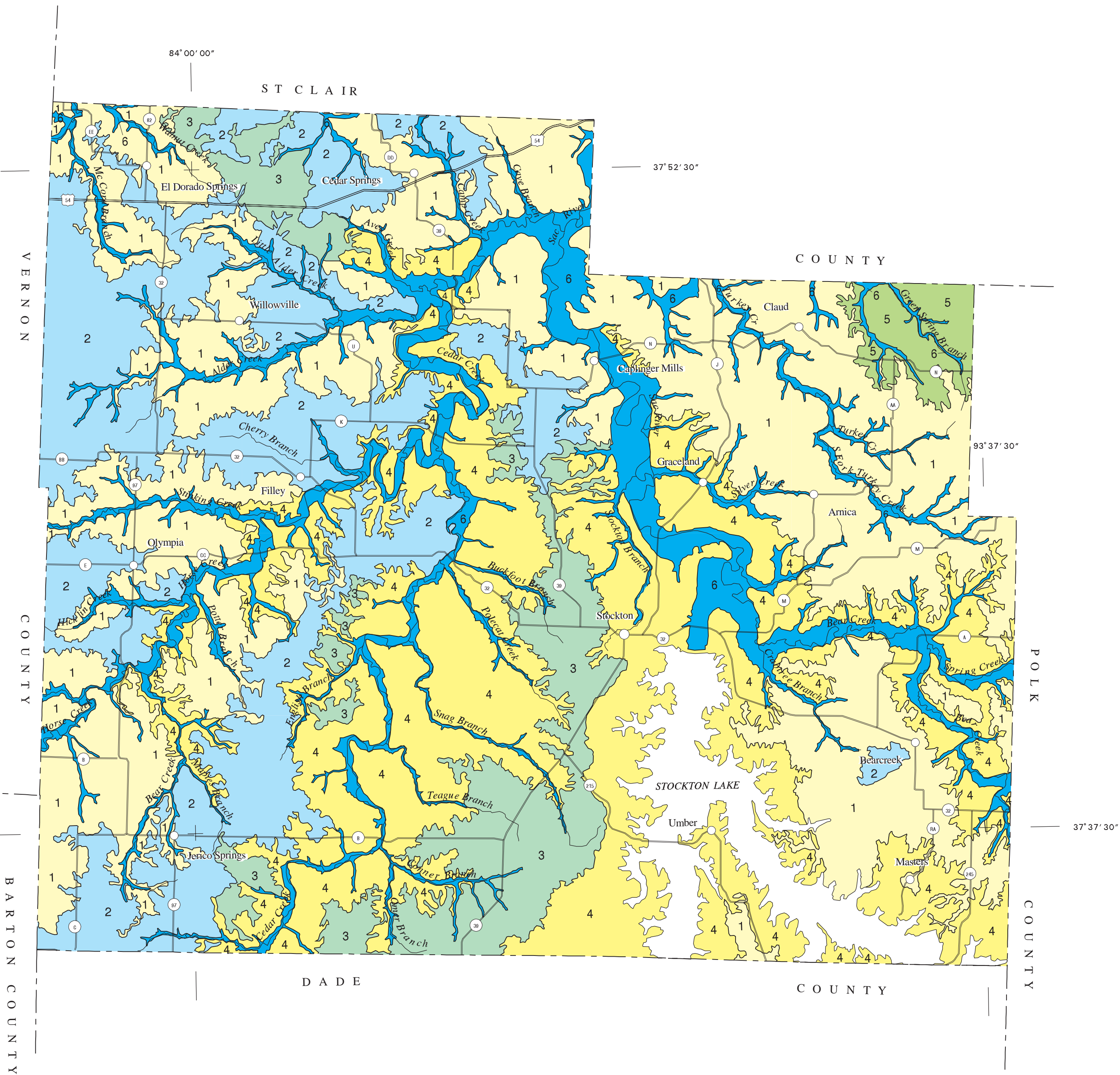
Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	In				
70044: Sonsac-----	Bedrock (lithic)	20-40	40-60	Indurated	Moderate	Moderate	Moderate
Moko-----	Bedrock (lithic)	4-20	60-76	Indurated	None	Low	Low
70047: Wanda-----	---	---	---	---	Moderate	Low	Moderate
70048: Alsup-----	Bedrock (paralithic)	40-60	4-40	Moderately cemented	Moderate	High	Moderate
70052: Arnica-----	---	---	---	---	Moderate	Moderate	High
70053: Courtois-----	---	---	---	---	Moderate	High	Moderate
70054: Cliquot-----	Bedrock (paralithic)	40-60	---	Moderately cemented	Moderate	High	High
71254: Cotter-----	---	---	---	---	High	Moderate	Moderate
71750: Cleora-----	---	---	---	---	None	Low	Moderate
73000: Pomme-----	---	---	---	---	Low	Moderate	Moderate
73003: Ocie-----	Bedrock (lithic)	40-60	---	Indurated	Moderate	High	Moderate
Gatewood-----	Bedrock (lithic)	20-40	---	Indurated	Moderate	High	Moderate
73005: Ocie-----	Bedrock (paralithic)	40-60	---	Indurated	Moderate	High	Moderate
73007: Plato-----	Fragipan	24-36	6-36	Noncemented	Moderate	High	High
73008: Viraton-----	Fragipan	18-33	8-30	Noncemented	Moderate	Moderate	High
73059: Pomme-----	---	---	---	---	Low	Moderate	Moderate
73075: Hobson-----	Fragipan	18-27	6-24	Noncemented	Moderate	Moderate	High
74625: Hartville-----	---	---	---	---	High	Moderate	Moderate
74641: Secesh-----	---	---	---	---	Moderate	Low	Moderate
75375: Horsecreek-----	---	---	---	---	High	Low	Low

Table 22.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	In				
75377: Racket-----	---	---	---	---	Moderate	Moderate	Low
75378: Sturkie-----	---	---	---	---	None	Low	Low
99000. Pits, quarries							
99001. Water							
99004: Kanima-----	---	---	---	---	None	Moderate	Low
99007. Dam							

Table 23.--Classification of the Soils

Soil name	Family or higher taxonomic class
Alsup-----	Fine, mixed, active, mesic Oxyaquic Hapludalfs
Arnica-----	Fine-loamy, mixed, active, thermic Oxyaquic Hapludalfs
Barco-----	Fine-loamy, mixed, active, thermic Humic Hapludults
Barden-----	Fine, mixed, active, thermic Aquollic Hapludalfs
Bolivar-----	Fine-loamy, mixed, active, thermic Ultic Hapludalfs
Bona-----	Clayey-skeletal, mixed, semiactive, mesic Typic Paleudolls
Cleora-----	Coarse-loamy, mixed, active, thermic Fluventic Hapludolls
Cliquot-----	Fine, mixed, semiactive, mesic Oxyaquic Hapludults
Collinsville-----	Loamy, siliceous, superactive, thermic Lithic Hapludolls
Cotter-----	Fine-silty, mixed, superactive, mesic Pachic Argiudolls
Courtois-----	Fine, mixed, active, mesic Typic Paleudalfs
Creldon-----	Fine, mixed, active, mesic Oxyaquic Fragiudalfs
Dameron-----	Fine-loamy, mixed, superactive, mesic Cumulic Hapludolls
Eldorado-----	Loamy-skeletal, mixed, active, thermic Typic Paleudolls
Gatewood-----	Very fine, mixed, active, mesic Oxyaquic Hapludalfs
Goss-----	Clayey-skeletal, mixed, active, mesic Typic Paleudalfs
Hartville-----	Fine, mixed, active, mesic Aquic Hapludalfs
Hoberg-----	Fine-loamy, siliceous, active, mesic Oxyaquic Fragiudalfs
Hobson-----	Fine-loamy, siliceous, active, mesic Oxyaquic Fragiudalfs
Horsecreek-----	Fine-silty, mixed, active, mesic Mollic Hapludalfs
Humansville-----	Fine-silty, mixed, superactive, mesic Cumulic Endoaquolls
Kanima-----	Loamy-skeletal, mixed, active, nonacid, thermic Alfic Udarents
Moko-----	Loamy-skeletal, mixed, superactive, mesic Lithic Hapludolls
Moniteau-----	Fine-silty, mixed, superactive, mesic Typic Endoaqualfs
Ocie-----	Loamy-skeletal over clayey, mixed, semiactive, mesic Oxyaquic Hapludalfs
Parsons-----	Fine, mixed, active, thermic Mollic Albaqualfs
Plato-----	Fine, mixed, active, mesic Aquic Fragiudalfs
Pomme-----	Fine-loamy, mixed, semiactive, mesic Typic Paleudalfs
Quarles-----	Fine, mixed, active, thermic Mollic Endoaqualfs
Racket-----	Fine-loamy, mixed, superactive, mesic Cumulic Hapludolls
Secesh-----	Fine-loamy, siliceous, active, mesic Ultic Hapludalfs
Sonsac-----	Clayey-skeletal, mixed, active, mesic Typic Hapludalfs
Sturkie-----	Fine-silty, mixed, superactive, mesic Cumulic Hapludolls
Sylvania-----	Fine, mixed, active, thermic Oxyaquic Haplohumults
Viraton-----	Fine-loamy, siliceous, active, mesic Oxyaquic Fragiudalfs
Wanda-----	Fine-loamy, mixed, active, mesic Typic Paleudolls



SOIL LEGEND*

- 1 Cliquot-Bolivar
- 2 Sylvania-Barden-Barco
- 3 Bona-Creldon-Hoberg
- 4 Goss-Sonsac
- 5 Ocie-Gatewood
- 6 Sturkie-Cleora-Moniteau

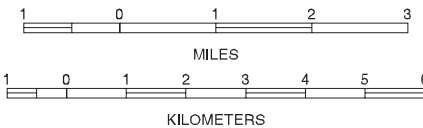
*The units on this legend are described in the text under the heading "General Soil Map Units."

Compiled 2002

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
In cooperation with
MISSOURI DEPARTMENT OF NATURAL RESOURCES,
MISSOURI AGRICULTURAL EXPERIMENT STATION,
MISSOURI DEPARTMENT OF CONSERVATION AND
U.S. ARMY CORPS OF ENGINEERS, KANSAS CITY DISTRICT

GENERAL SOIL MAP
CEDAR COUNTY, MISSOURI

Scale 1:126720



Each area outlined on this map consists of more than one kind of soil. The map is meant for general planning rather than a basis for decisions on the use of specific tracts.

84° 00' 00"

93° 37' 30"

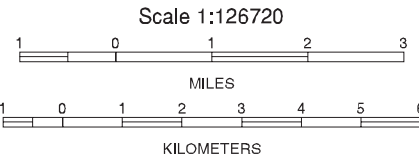
37° 52' 30"

37° 37' 30"

N



INDEX TO MAP SHEETS
CEDAR COUNTY, MISSOURI



SOIL LEGEND

Map symbols consist of five-digit numbers that represent the individual map units. The symbols are related to the MLRA in which the typical pedon is located and to the landform on which it occurs. These symbols are part of the Missouri statewide soil identification legend.

SYMBOL	NAME
40000	Barden silt loam, 1 to 3 percent slopes
40001	Bolivar loam, 3 to 8 percent slopes
40004	Barden loam, 2 to 5 percent slopes
40005	Sylvania loam, 5 to 15 percent slopes, very stony
40006	Barco-Sylvania complex, 2 to 5 percent slopes
40007	Eldorado gravelly loam, 3 to 15 percent slopes, very stony
40008	Parsons silt loam, 0 to 2 percent slopes
40009	Sylvania loam, 5 to 8 percent slopes
40010	Collinsville-Rock outcrop complex, 3 to 15 percent slopes
44001	Quarles silt loam, 0 to 2 percent slopes, rarely flooded
46000	Humansville silt loam, 0 to 2 percent slopes, frequently flooded
66000	Moniteau silt loam, 0 to 2 percent slopes, occasionally flooded
66001	Dameron silt loam, 0 to 3 percent slopes, frequently flooded
70000	Bona gravelly silt loam, 3 to 8 percent slopes
70001	Bona gravelly silt loam, 8 to 15 percent slopes
70002	Alsup gravelly silt loam, 3 to 8 percent slopes
70003	Alsup gravelly silt loam, 8 to 15 percent slopes
70004	Alsup silt loam, 15 to 35 percent slopes, very stony
70006	Creldon silt loam, 1 to 3 percent slopes
70007	Cliquot gravelly loam, 8 to 15 percent slopes
70008	Goss gravelly silt loam, 3 to 8 percent slopes
70009	Goss gravelly silt loam, 8 to 15 percent slopes
70010	Goss very cobbly silt loam, 15 to 35 percent slopes
70011	Goss-Moko complex, 8 to 35 percent slopes
70012	Hoberg silt loam, 2 to 5 percent slopes
70014	Moko-Rock outcrop complex, 15 to 35 percent slopes, very stony
70040	Cliquot-Bolivar complex, 3 to 8 percent slopes
70041	Goss very gravelly silt loam, 8 to 15 percent slopes
70042	Goss very gravelly silt loam, 15 to 35 percent slopes
70043	Sonsac-Moko-Rock outcrop complex, 3 to 15 percent slopes
70044	Sonsac-Moko complex, 15 to 35 percent slopes, rocky
70047	Wanda silt loam, 2 to 5 percent slopes
70048	Alsup silt loam, 8 to 15 percent slopes, very stony
70052	Arnica loam, 2 to 5 percent slopes
70053	Courtois silt loam, 2 to 5 percent slopes
70054	Cliquot gravelly loam, 3 to 20 percent slopes, very stony
71254	Cotter silt loam, 0 to 2 percent slopes, rarely flooded
71750	Cleora fine sandy loam, 0 to 2 percent slopes, frequently flooded
73000	Pomme silt loam, 3 to 8 percent slopes
73003	Ocie-Gatewood complex, 15 to 35 percent slopes
73005	Ocie gravelly silt loam, 3 to 15 percent slopes
73007	Plato silt loam, 1 to 3 percent slopes
73008	Viraton silt loam, 2 to 5 percent slopes
73059	Pomme silt loam, 1 to 3 percent slopes
73075	Hobson loam, 1 to 3 percent slopes
74625	Hartville silt loam, 3 to 8 percent slopes
74641	Secesh silt loam, 0 to 2 percent slopes, occasionally flooded
75375	Horsecreek silt loam, 0 to 2 percent slopes, occasionally flooded
75377	Racket silt loam, 0 to 3 percent slopes, frequently flooded
75378	Sturkie silt loam, 0 to 2 percent slopes, frequently flooded
99000	Pits, quarries
99001	Water
99004	Kanima very channery silt loam, 8 to 50 percent slopes
99007	Dam

CONVENTIONAL AND SPECIAL
SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

County or parish	
Field sheet matchline and neatline	
Public Land Survey System Section Boundary	

ROAD EMBLEM & DESIGNATIONS

Federal	
State	
County, farm or ranch	

WATER FEATURES

MISCELLANEOUS WATER FEATURES

Wet spot	
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SPECIAL SYMBOLS FOR
SOIL SURVEY

SOIL DELINEATIONS AND SYMBOLS

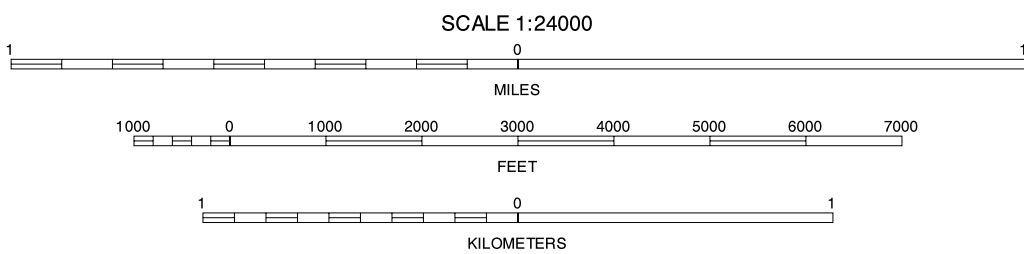
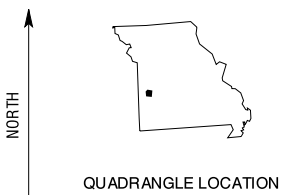
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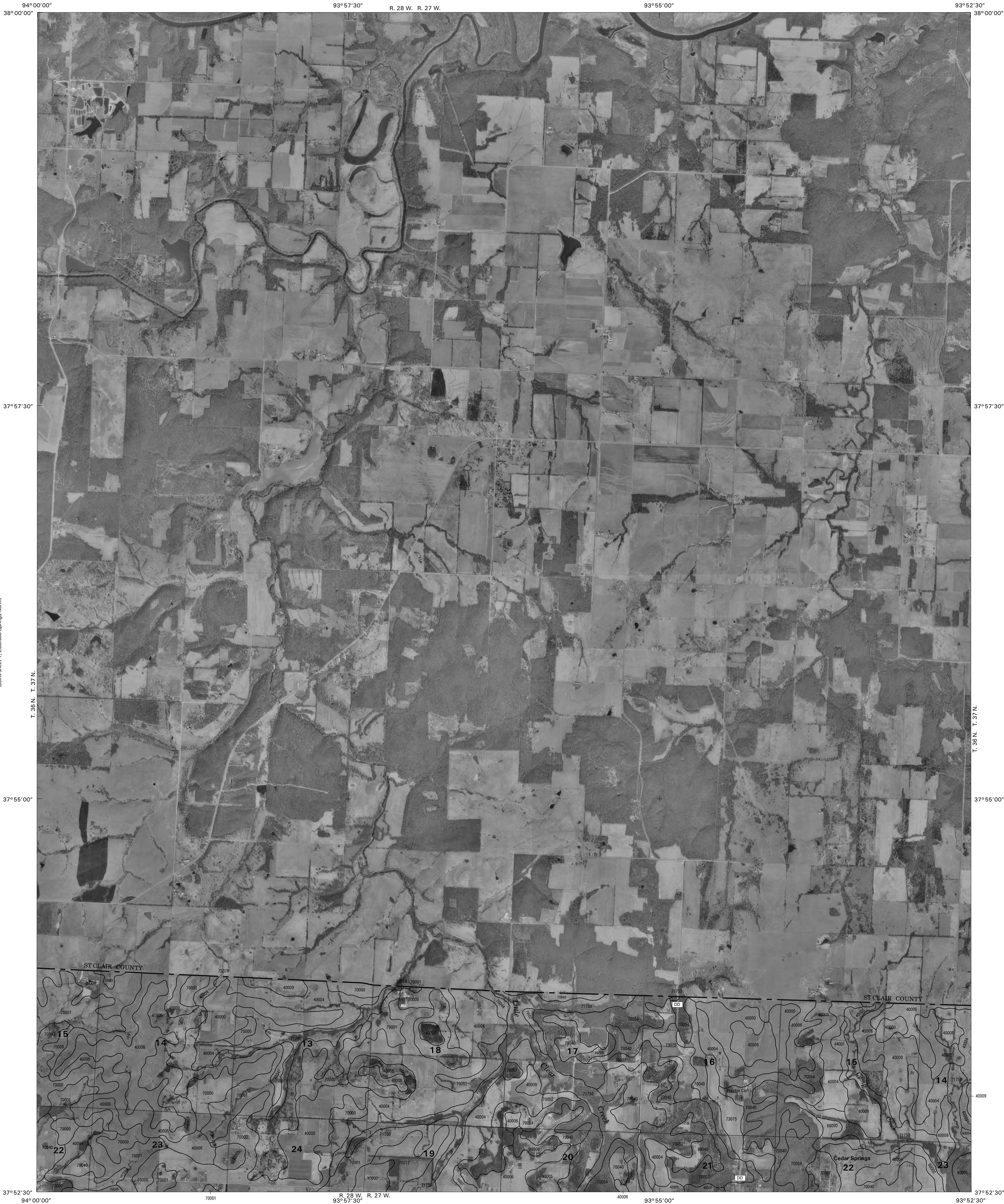
This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1995-1997 aerial photography.

North American Datum of 1983 (NAD83), GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 15. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

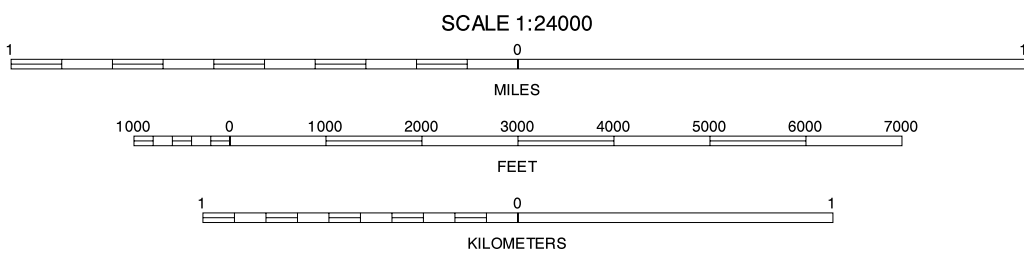


1	2	3	1
4	5	6	2
6	7	8	3
INDEX TO ADJOINING 7.5 MAPS			

EL DORADO SPRINGS NORTH, MISSOURI
7.5 MINUTE SERIES
SHEET NUMBER 1 OF 17



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1995-1997 aerial photography. North American Datum of 1983 (NAD83), GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 15. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



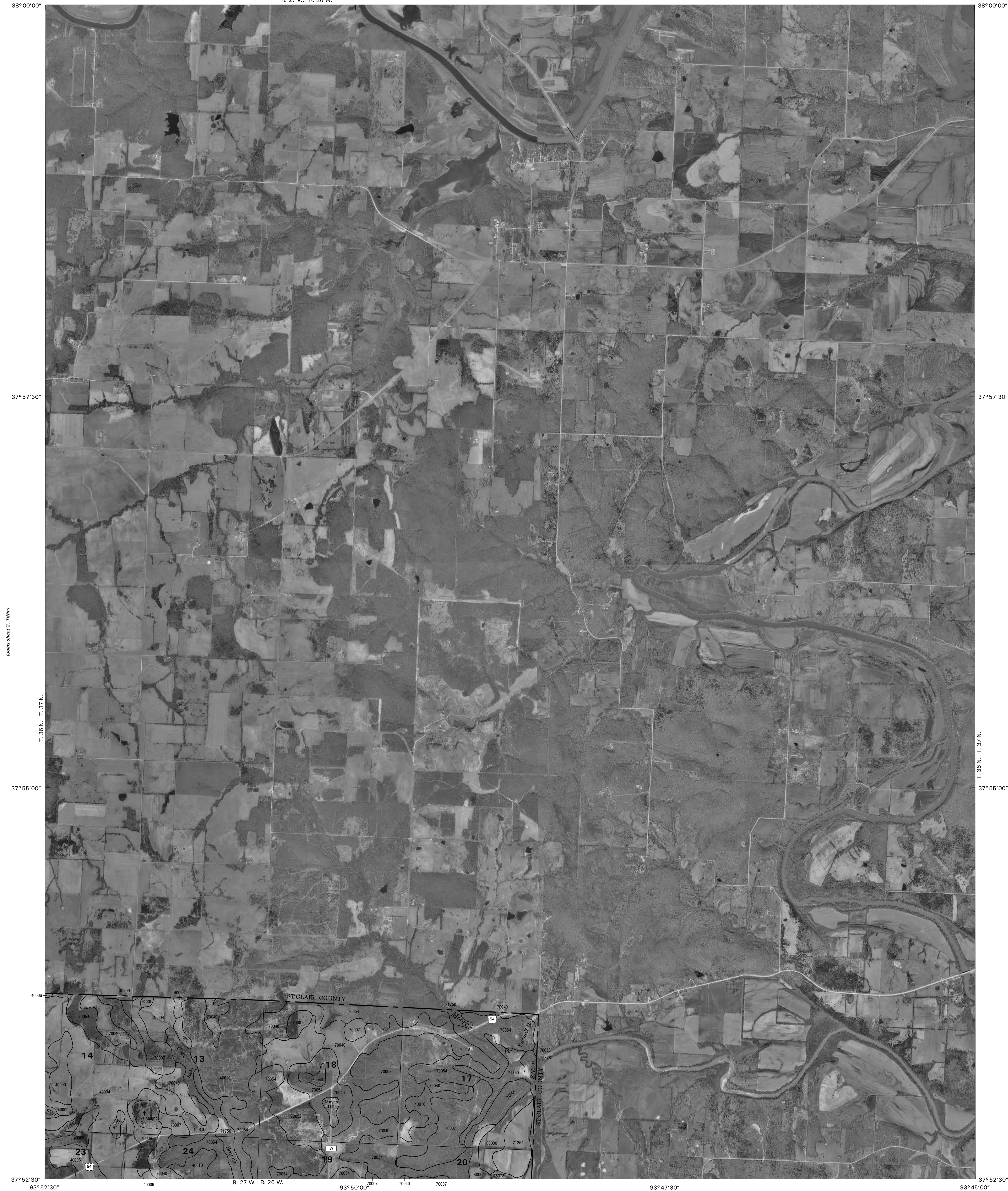
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7	8	

INDEX TO ADJOINING 7.5 MAPS

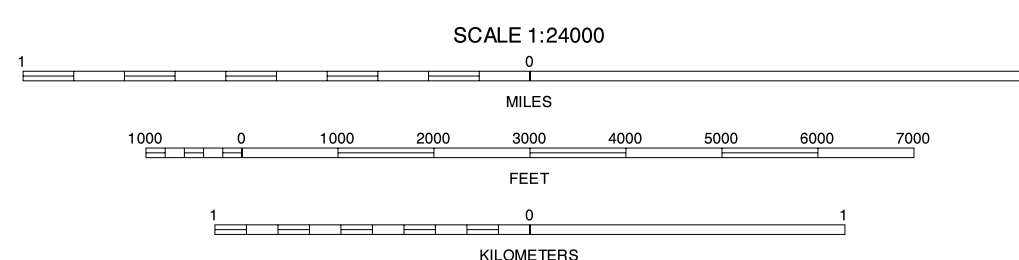
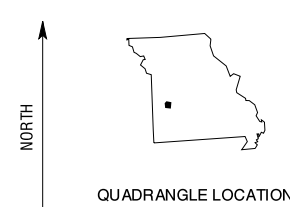
TIFFIN, MISSOURI
7.5 MINUTE SERIES
SHEET NUMBER 2 OF 17

CEDAR COUNTY, MISSOURI
ROSCOE QUADRANGLE
SHEET NUMBER 3 OF 17

93° 52' 30" R. 27 W. R. 26 W. 93° 50' 00" 93° 47' 30" 93° 45' 00" 38° 00' 00" 38° 00' 00"



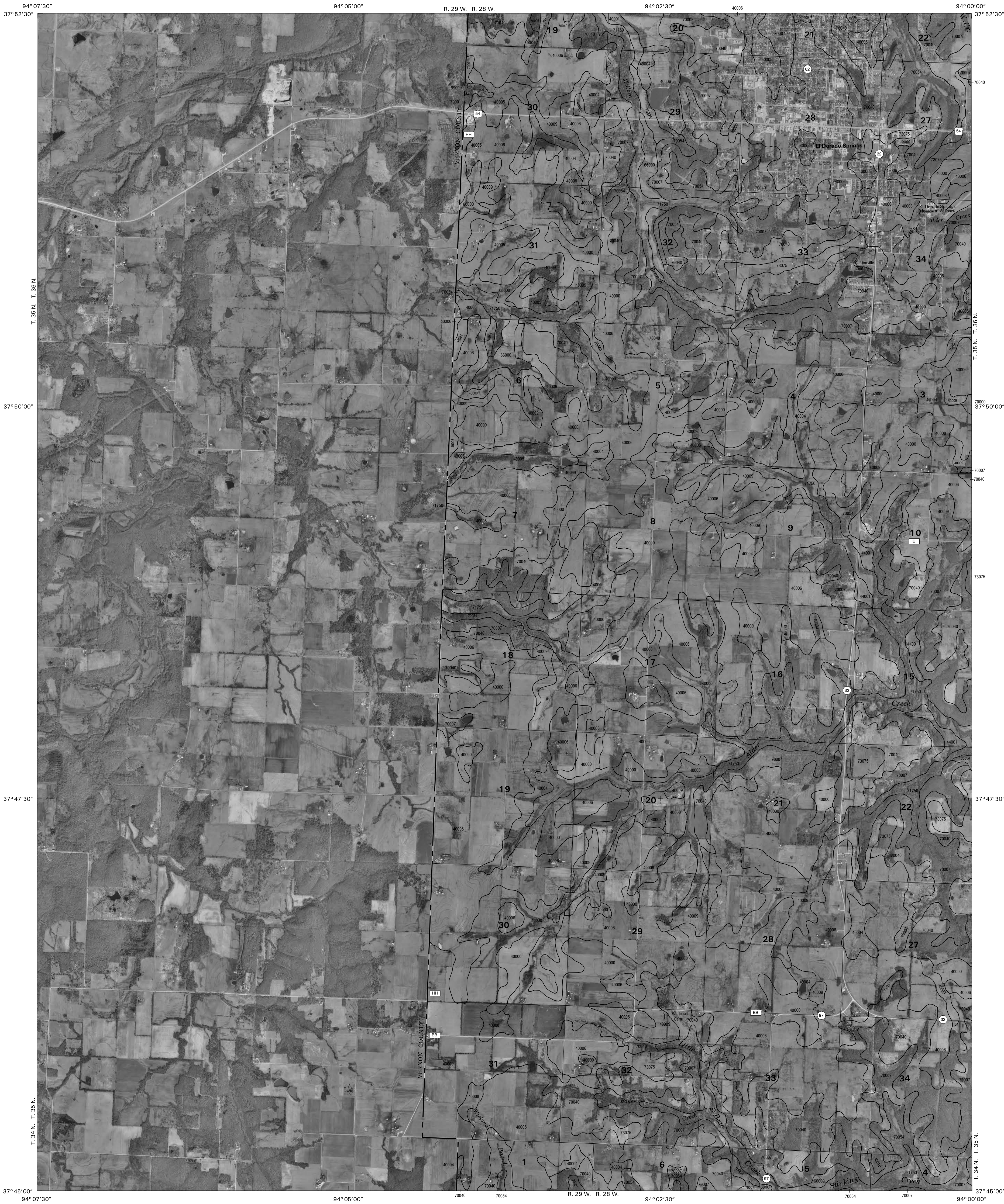
North American Datum of 1983 (NAD83). GRS-80 Spheroid
1000-meter ticks; Universal Transverse Mercator, zone 15.
Coordinate grid ticks and land division data, if shown, are
approximately positioned. Digital data are available for
this quadrangle.

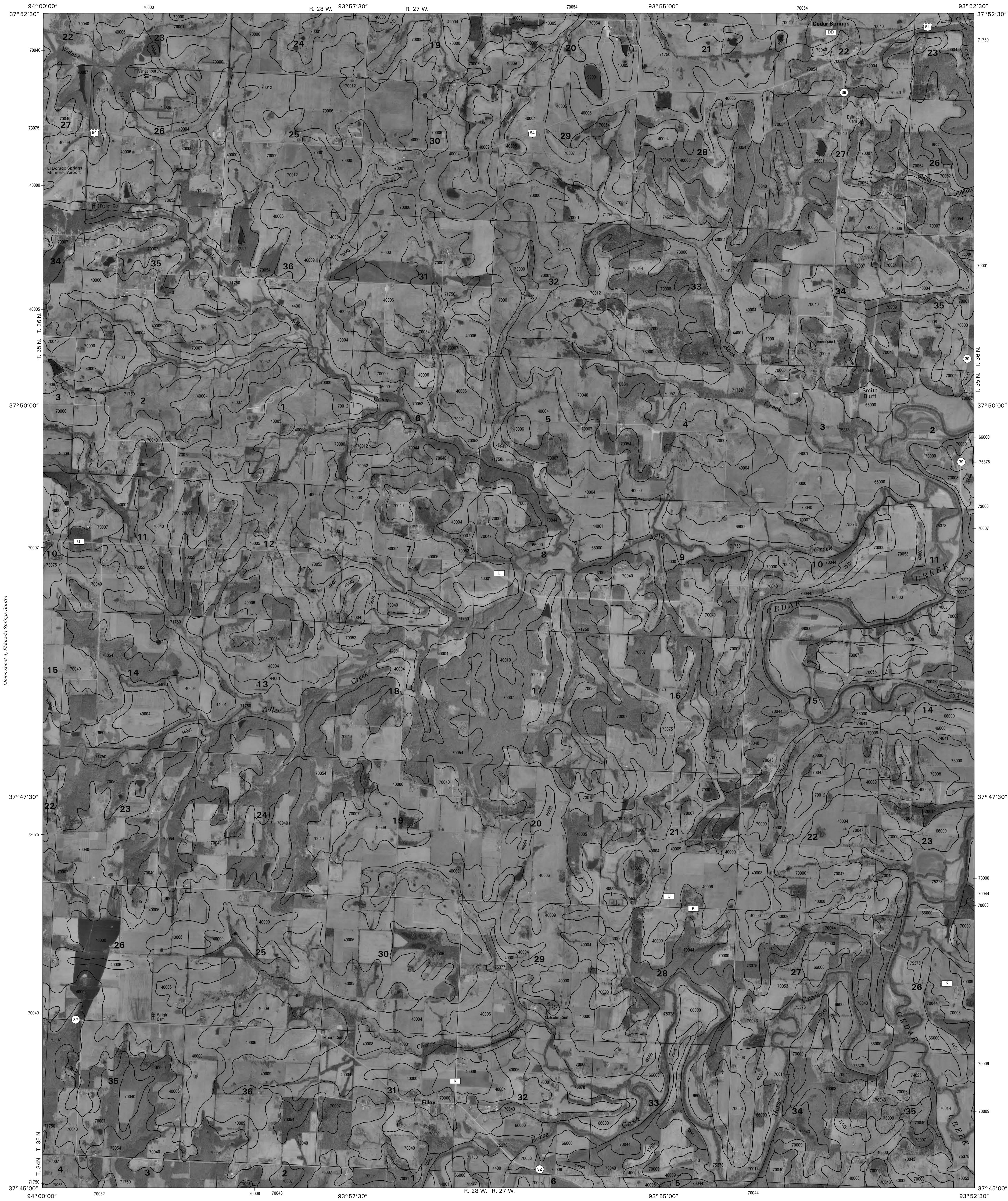


1	2	3	1	TABERVILLE
			2	MONEGAW SPRINGS
			3	OSCEOLA
4		5	4	TIFFIN
			5	VISTA
			6	FILLEY
6	7	8	7	CAPLINGER MILLS
			8	ARNICA

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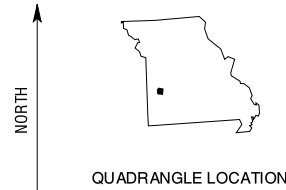
(Joins sheet 1, El Dorado Springs North)



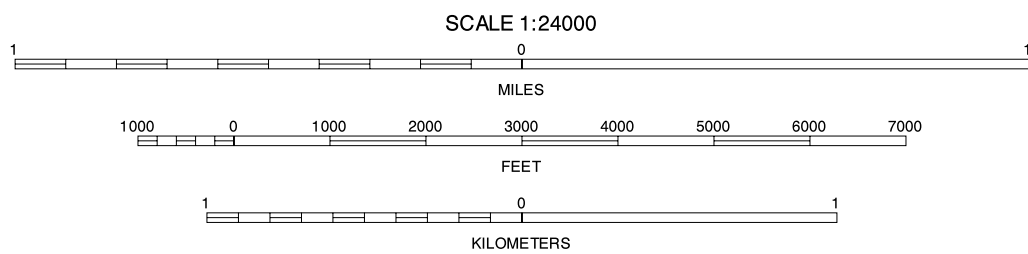


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North American Datum of 1983 (NAD83), GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 15. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION



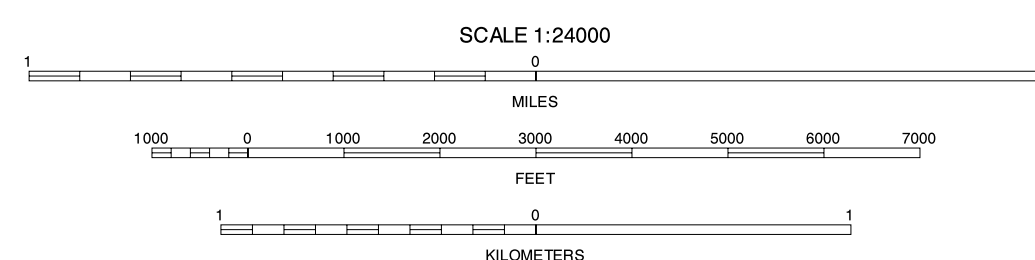
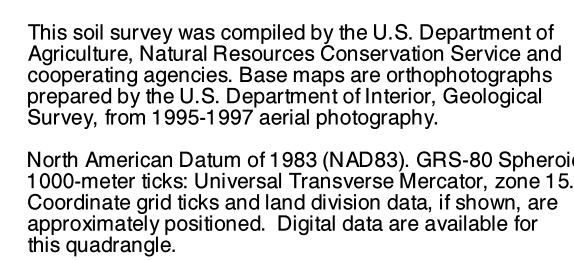
1	2	3	1 EL DORADO SPRINGS NORTH
			2 TIFFIN
			3 ROSCOE
4		5	4 EL DORADO SPRINGS SOUTH
			5 CAPLINGER HILLS
			6 MONTEVALLO
6	7	8	7 WAGONER
			8 STOCKTON

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SHEET NUMBER 5 OF 17

CEDAR COUNTY, MISSOURI
CAPLINGER MILLS QUADRANGLE
SHEET NUMBER 6 OF 17

(Joins sheet 3, Roscoe)



1	2	3	1 TIFFIN
			2 ROSCOE
4		5	3 VISTA
			4 FILLEY
6	7	8	5 ARNICA
			6 WAGONER
			7 STOCKTON
			8 BEARCREEK

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CAPLINGER MILLS, MISSOURI
7.5 MINUTE SERIES
SHEET NUMBER 6 OF 17

CEDAR COUNTY, MISSOURI
ARNICA QUADRANGLE
SHEET NUMBER 7 OF 17

T. 35 N. T. 36 N. 37° 50' 00"

37° 47' 30"

R. 25 W. R. 24 W.

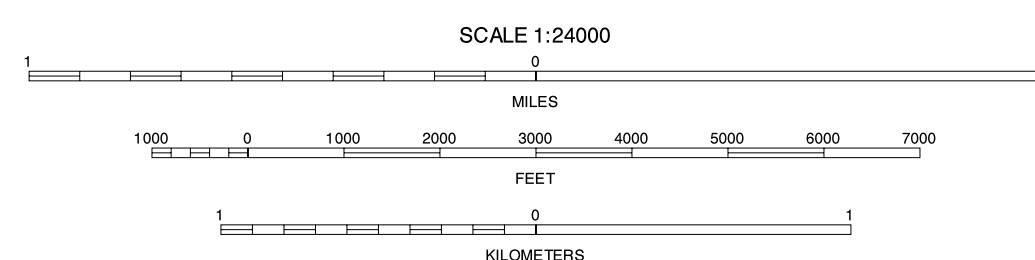
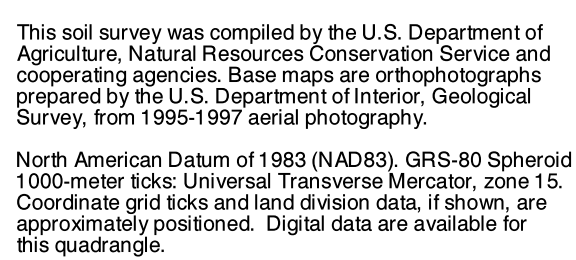
1	2	3	1 ROSCOE
			2 VISTA
			3 WEAUBLEAU
4		5	4 CAPLINGER MILLS
			5 HUMANSVILLE
6	7	8	6 STOCKTON
			7 BEARCREEK
			8 FAIR PLAY

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ARNICA, MISSOURI
7.5 MINUTE SERIES
SHEET NUMBER 7 OF 17

CEDAR COUNTY, MISSOURI
MONTEVALLO QUADRANGLE
SHEET NUMBER 8 OF 17

(Joins sheet 13, Jerico Springs)



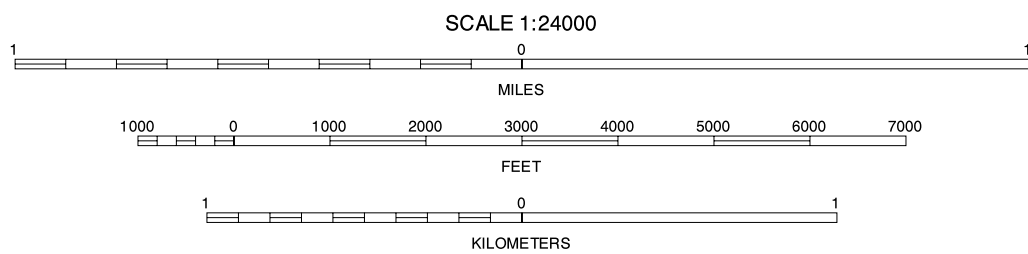
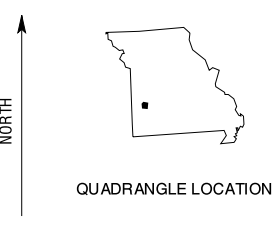
1	2	3	1 DEDERICK
			2 ELDORADO SPRINGS SOUTH
			3 FILLEY
4		5	4 BELLAMY
			5 WAGONER
			6 MILFORD
6	7	8	7 JERICHO SPRINGS
			8 CEDARVILLE

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North American Datum of 1983 (NAD83), GRS-80 Spheroid 1:000-meter ticks. Universal Transverse Mercator, zone 15. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

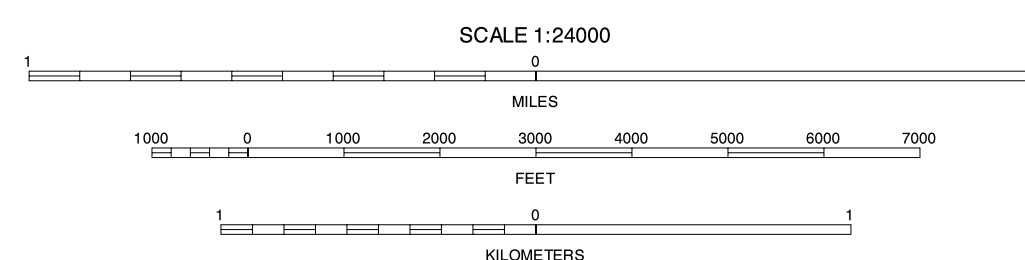
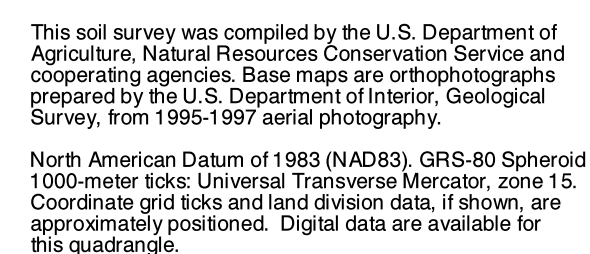


1	2	3
4	5	
6	7	8

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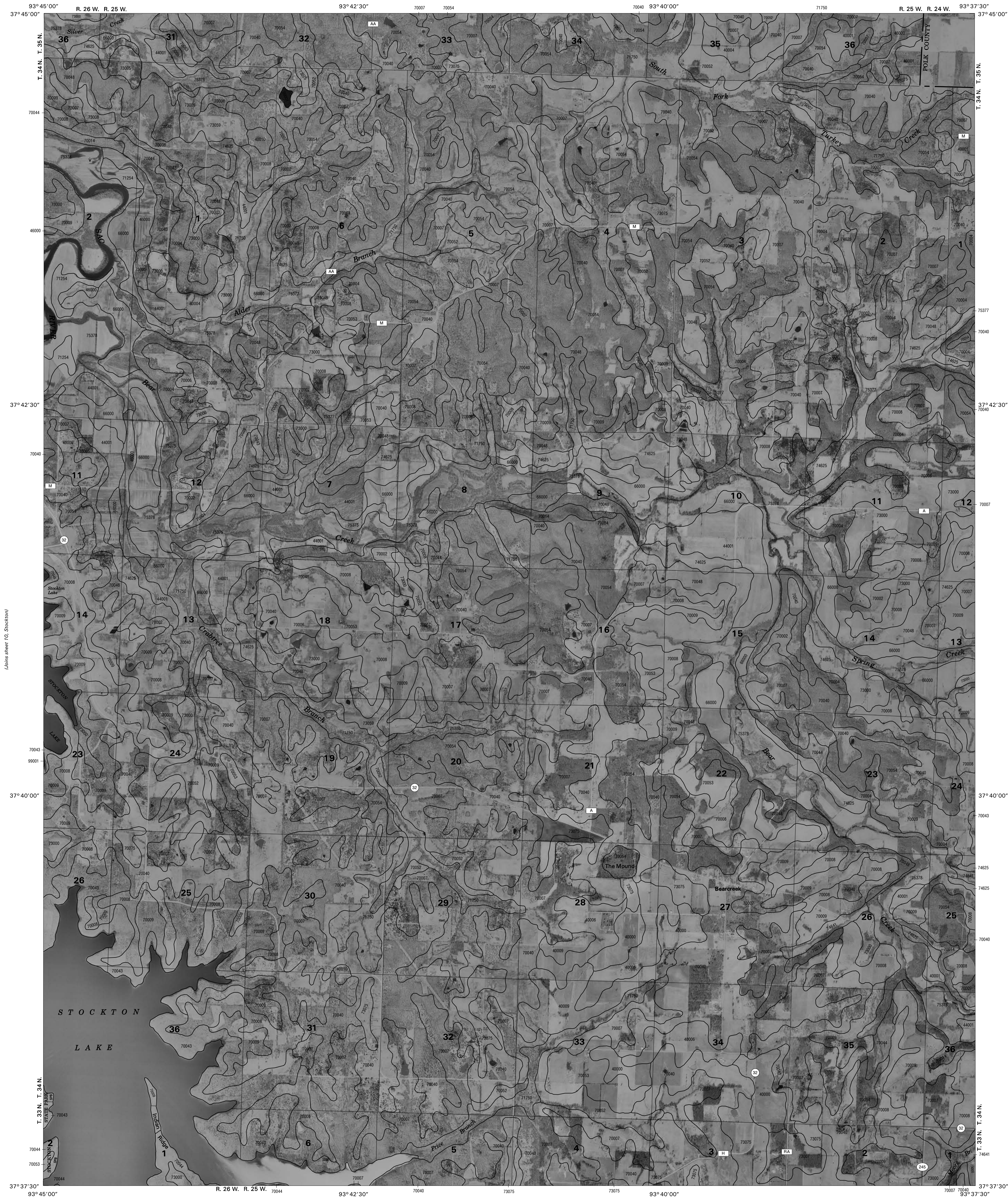
CEDAR COUNTY, MISSOURI
STOCKTON QUADRANGLE
SHEET NUMBER 10 OF 17



1	2	3	1 FILLEE
			2 CAPLINGER MILLS
4		5	3 ARNICA
			4 WAGONER
6	7	8	5 BEARCREEK
			6 CEDARVILLE
			7 CRISP
			8 BONA

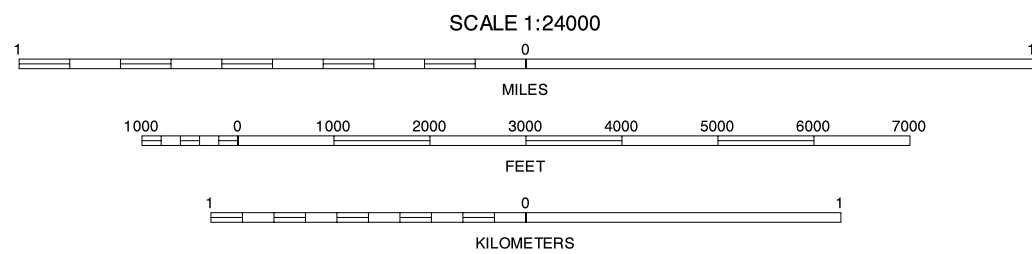
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STOCKTON, MISSOURI
7.5 MINUTE SERIES
SHEET NUMBER 10 OF 17



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North American Datum of 1983 (NAD83), GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 15. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



1	2	3
4	5	
6	7	8

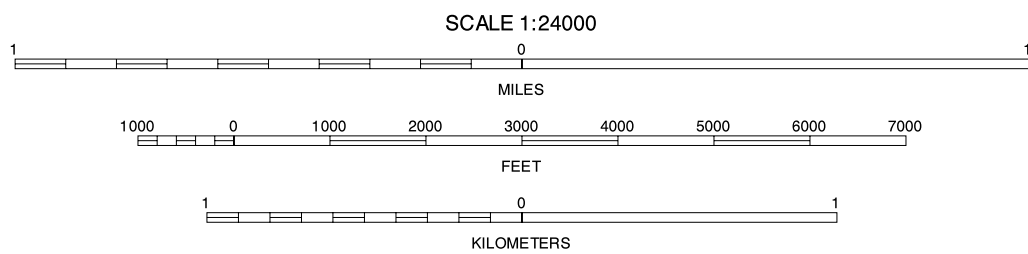
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BEARCREEK, MISSOURI
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North American Datum of 1983 (NAD83), GRS-80 Spheroid 1000-meter ticks Universal Transverse Mercator, zone 15. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



1	2	3	1 ARNICA
			2 HUMANSVILLE
			3 ELKTON
4		5	4 BEARCREEK
			5 CUGUJOY
6	7	8	6 BCNA
			7 ALDRICH
			8 BOLIVAR

FAIR PLAY, MISSOURI
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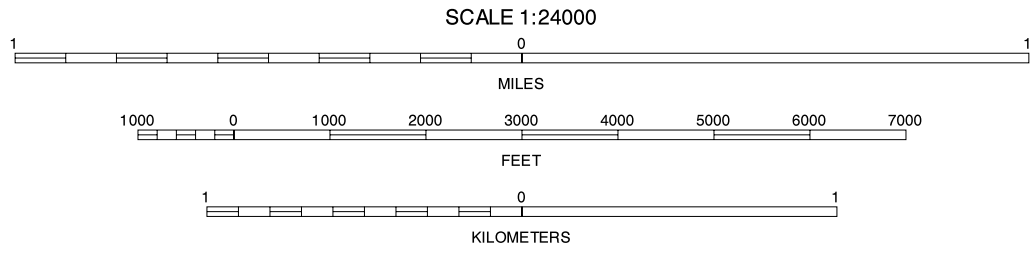
(Joins sheet 8, Montevallo)



(Joins sheet 14, Cedarville)

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North American Datum of 1983 (NAD83), GRS-80 Spheroid 1000-meter ticks Universal Transverse Mercator, zone 15. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



1	2	3
4	5	6
7	8	9

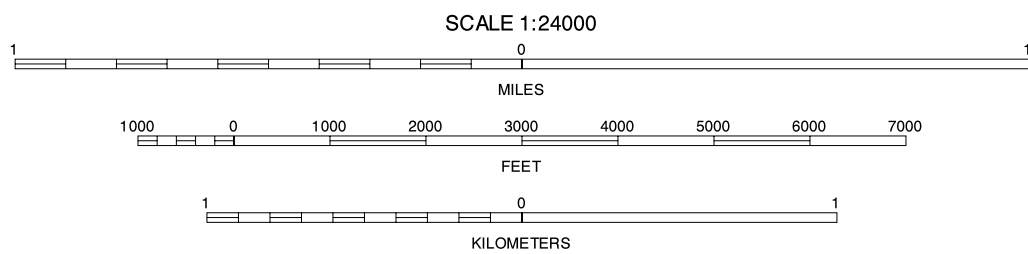
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JERICO SPRINGS, MISSOURI
7.5 MINUTE SERIES
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North American Datum of 1983 (NAD83), GRS-80 Spheroid 1000-meter ticks Universal Transverse Mercator, zone 15. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



1	2	3
4	5	6
7	8	9

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1 MONTEVALLO
2 WAGONER
3 STOCKTON
4 JERICHO SPRINGS
5 CRISP
6 GOLDEN CITY
7 LOCKWOOD
8 GREENFIELD

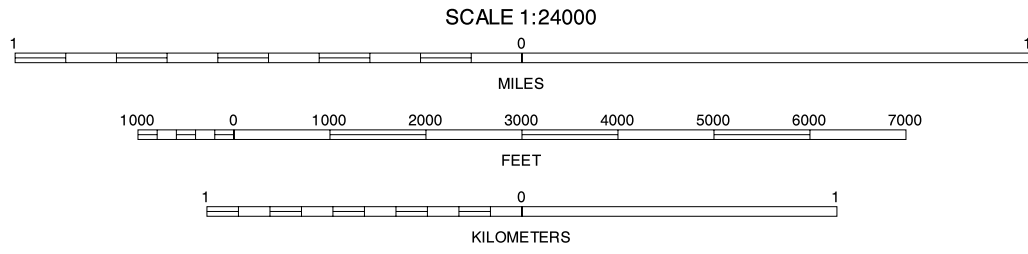
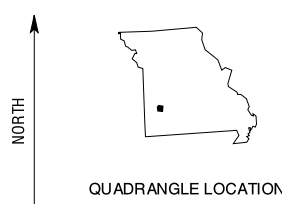
CEDARVILLE, MISSOURI
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(Joins sheet 10, Stockton)



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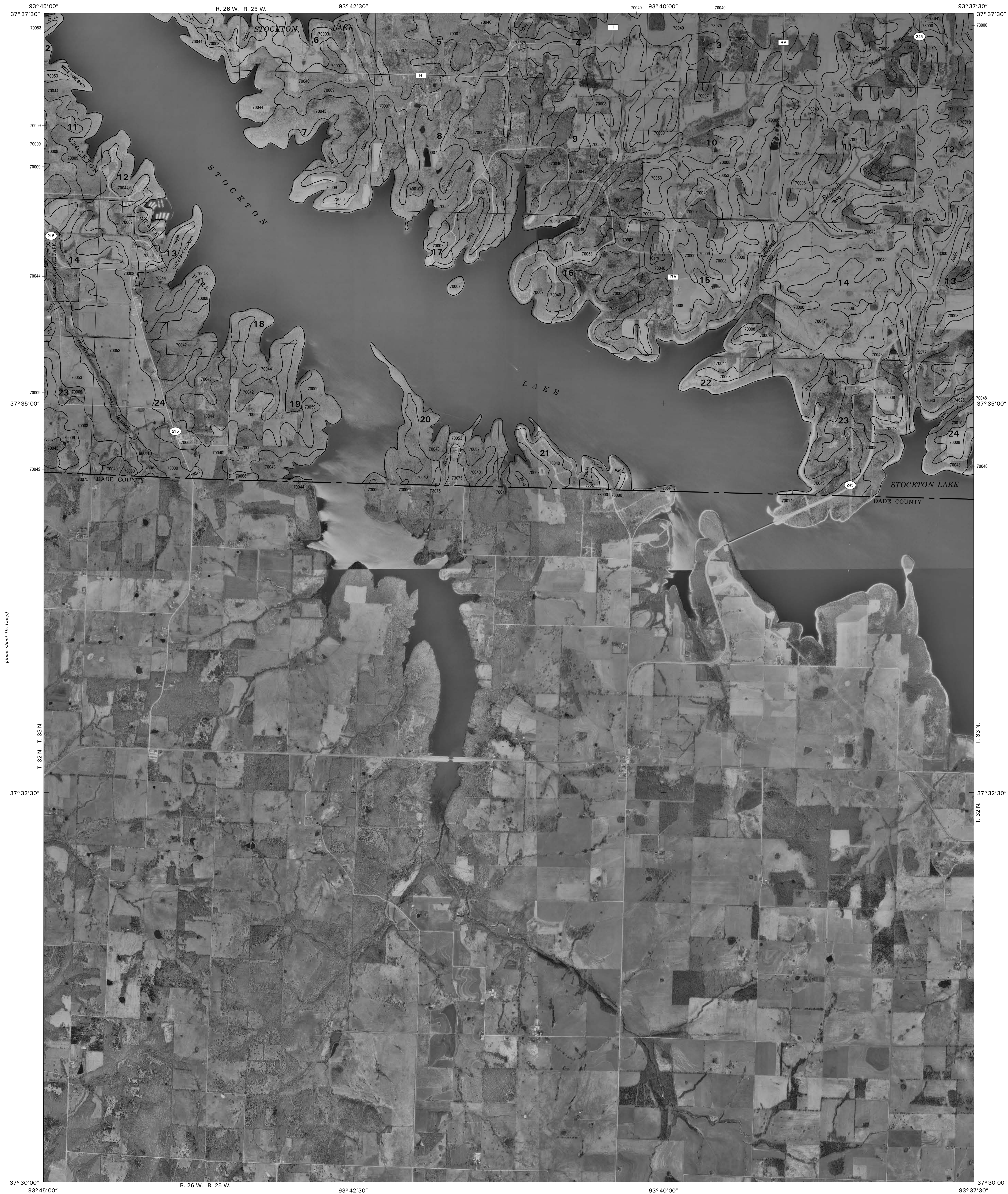
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1	2	3
4	5	6
7	8	9

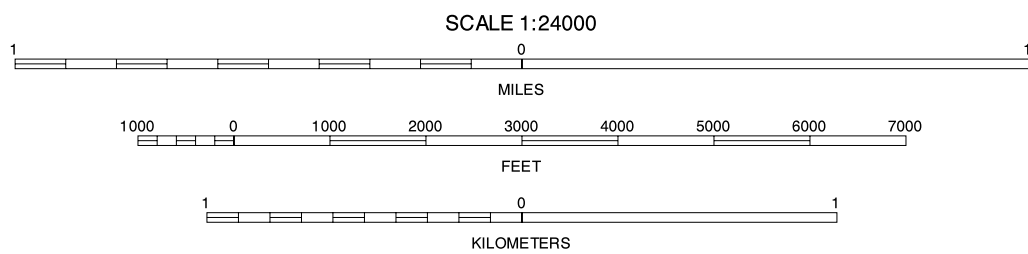
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1	2	3
4	5	6
7	8	9

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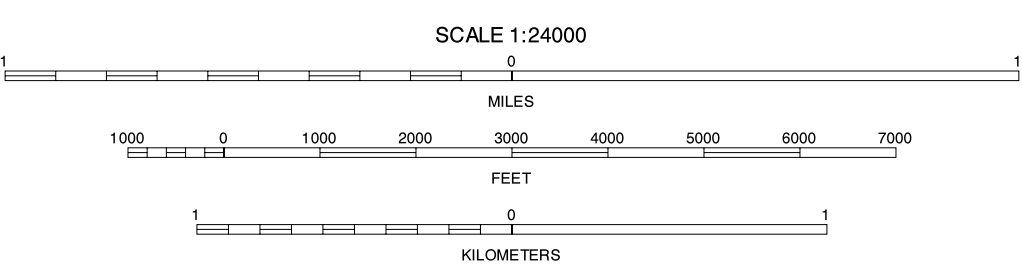
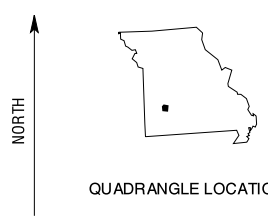
BONA, MISSOURI
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(Joins sheet 12, Fair Play)



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 15. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



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4	5	6
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